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AGRICULTURAL POLICY IN ALBERTA - A STUDY ON SOME ASPECTS OF CONSISTENCY IN POLICY

by

© TIMOTHY OLA

A THESIS

SUBMITTED TO THE FACULTY OF

GRADUATE STUDIES AND RESEARCH

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FACULTY OF GRADUATE STUDIES AND RESEARCH

The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies and Research, for acceptance, a thesis entitled "Agricultural Policy in Alberta - A Study on Some Aspects of Consistency in Policy" submitted by Timothy Ola in partial fulfilment of the requirements for the degree of Master of Science.

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ABSTRACT

Progress in and maintenance of Alberta agriculture are as much governed by Provincial as by Federal policies in agriculture at any particular period. Inconsistencies in policy objectives and means delay and may even prevent government aims and the interests of those in the agricultural industry from being realized.

Examination of the existence and absence of conflicts in Alberta agricultural policy is based on the propositions that: (1) by systematic description and classification of policies it is possible to assess the internal consistency of a set of policies and to summarize its overall thrust; and (2) agricultural policy in Alberta is an interrelated set of government decisions, statements and subsequent actions that respond to identified needs of the constituencies. Analysis is viewed from the economic, political, historical and legal contexts.

A policy matrix helps to describe and classify policies and to study interrelationships among policy objectives and among the divisional units within the Alberta Department of Agriculture in 1972. Arithmetic calculations, and discriminant analysis are useful quantitative tools for studying some aspects of policy consistency.

Results of analyses indicate that by the absolute size of the 1972-73 and 1971-72 budget estimates, the relative order of emphasis on ADA functions was extension work, family farm development, animal

industry, plant industry, irrigation activities, veterinary services and marketing. In terms of percentage calculations, the order of enterprise emphasis was marketing, irrigation, extension, family farm development, plant industry and veterinary services. In the discriminant analysis, four discriminant functions were obtained. Seven of the eleven identified divisions of the ADA and four of the five identified objectives in agriculture accounted for the functions of the Department. On the best discriminant function, the ranking of the seven divisions are Family Farm Development, Product Development, Animal Industry, Market Intelligence, Veterinary Services, Extension and Plant Industry. The four objectives are ranked on this function in order: family farm development, improvement in farm income, productivity increase and market thrust.

Comparison between results of expenditure estimates analysis, discriminant analysis and statements on agriculture in the Progressive Conservative party policy on Alberta agriculture in the 70's reveals the existence of probable conflicts in ADA objectives for agriculture in 1972. Expenditure estimates analysis are for two years only, 1971-72 and 1972-3. Results of discriminant analysis, too, reflect author's subjective ranking of the relative importance of written policy statements to five objectives, the fifth objective being income distribution. With some refinements, the principle of analysis is practicable. Granted the importance of agriculture in the provincial economy and with the present structure of ADA and its objectives not varying much from that of 1972, results of this thesis study point to the need for further analysis of the nature of agricultural policy and its efficiency of implementation in Alberta.

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CHAPTER I

INTRODUCTION

Justification for the Study

Agricultural policy in Alberta is set within the context of general Canadian agricultural and economic policies and is in accordance with the constitutional rules of the British North American Act. In some recent studies there have been indications that inconsistencies afflict Canadian agricultural policy. Crown and Heady's [71] thesis on Policy Integration in Canadian Agriculture focuses on this problem. Brandow [49] and Gilson [101] have also observed that there are conflicts in the agricultural policy of Canada.

Gilson and Fowke [101] attribute the lack of permanence and internal consistency in agricultural policy to the absence of a recognizable conceptual framework. In the absence of any such public examination of agricultural policy at the Provincial level, one can safely hypothesize that agricultural policy in Alberta is not free from conflict.

Inconsistency in the Provincial agricultural policy causes inefficiency in policy implementation and in the actual agricultural activities. Inconsistency leads to duplication of activities and contradictory objectives. The assignment of the wrong type of objectives to an administering agency thus wastes precious resources and brings about slow growth and development.

Incompatibility in policy may also occur in the context of time. Goals for a particular period may either not be attainable, inharmonious with other goals or are vague and incomprehensible for meaningful action. Consistency, therefore, provides a well structured and balanced environment of guiding rules for the attainment of agricultural objectives within the general framework of national and Provincial economic growth and development.

In this thesis attention is focused only on the possibility of internal inconsistencies of the policies pursued by the Province as of 1972. For a more complete understanding of the problem, the analysis should be extended to include an examination of the historical development of agriculture within the background of previous years, the concurrent evolution of agricultural policy and the relationships between Provincial and national policies.

Objectives

It is the concern of this thesis to:

(i) Identify, list and obtain sources of information for the study of agricultural policy in Alberta in 1972.

(ii) Identify, list and describe agricultural policies in Alberta in 1972.

(iii) Describe these policies on the basis of their properties which can be identified by the type of legal authority (acts, regulations, administrative decisions) and time of origination; the administrative level (Minister, Cabinet, divisions, branch section, administration and commissions of the ADA; Citizens' Board with members elected by the constituencies); the locus of policy (Alberta

Government, ADA, other departments of the Alberta Government, the Federal Government); the field of application (production, development, marketing, infrastructure, income and rural life, rural institutions, human resources); agricultural enterprise (crops, specialty crops, horticultural, farm animals, specialty animals, animal products, others); geographical area (Province, individual regions); mode of execution (directly by the ADA and other government departments and institutions); joint Federal and Provincial execution; executed by Municipal Governments; direct by other Government departments; possibility of measuring and evaluating the achievements of policy (quantitatively measurable, subjectively measurable, public opinions).

(iv) Describe interactions between the other policies and show which policies are mutually supportive, complementary, mutually competitive, redundant, and obsolete.

(v) Aggregate particular areas of classification to identify major areas of emphasis, growth focus, particular areas of enterprise emphasis, and to apply the information from (i) to (vii).

(vi) Assess field of application emphasis.

(vii) Find out if there is a greater emphasis on joint programs.

Working Hypotheses

Two working hypotheses embodying the major questions behind this study were:

1. That by systematic description and classification of policies, it is possible to assess the internal consistency of a set

of policies and to summarize its overall thrust.

2. That agricultural policy in Alberta is an interrelated set of government decisions, statements and subsequent actions that respond to identified needs of the constituencies.

Some of the major issues linked with the two statements above are: (i) whether policies are completely or partially consistent, and (ii) whether current policies are mere accretions of past choices.

Opportunities and Constraints of the Study

This study obtained part of the needed information from the 1972 annual reports of the Alberta Department of Agriculture and from those of other Provincial government departments. The published budgetary estimates of the Provincial government's annual income and expenditure for these departments assisted in realizing the policies and their implementation in terms of the dollar estimates to be spent on these policies. The Progressive Conservative Party's pamphlet on Alber[illegible] Agriculture in the 70's suggested the line of emphasis for the Provincial agricultural policy. Additional information could be obtained from the files of the appropriate bodies.

Policies in the annual reports were quite disaggregated at the various levels of implementation. They therefore indicated the rule for naming and coding them for analysis. In the public expenditure and income account books, policies were more aggregated than were those in the annual reports. The manner in which these policies were recorded helped in identifying the categories of the more atomistic type of policies in the annual reports. The usefulness

of the party manifesto booklet was in circumscribing the field of analysis of the study.

A second level of opportunity for the study was the use of the United States Geological Survey's A Procedure for Evaluating Environmental Impact [159]. It provided a guideline for the construction of an initial policy matrix. The Survey's report was reinforced with other sources of definitions of terms and methods of constructing a matrix for a policy study. Some of these sources are:

(i) Paul Horst's monumental work Factor Analysis of Data Matrices [138],

(ii) a collection of important essays on Public Expenditures and Policy Analysis, edited by Haveman and Margolis [122],

(iii) Matrices and Their Applications [50],

(iv) the unpublished "Fundamentals of Policy Planning Framework" of the Policy and Liaison Secretariat [14].

Also facilitating the study was the availability of computer facilities to code, sort out and analyse the mass of data. Secondly, there were written computer programs and some basic works on the methods which could be used to analyse and interpret the data [173; 86; 221; 2; 69; 70].

Constraints of the Study.

Four constraints limited the field and depth of focus of this study:

1. There was difficulty in obtaining explicit policy statements in the annual reports of the various provincial government departments. It was also difficult in obtaining statistics on manpower allocation.

In the recent public expenditure books for the province the recording of the manpower usage in terms of man years does not, however, solve the problem of disaggregation for very detailed type of policy analysis.

2. Because the appropriation numbers for some of the ADA functions have changed over time and because there have been changes in some of these functions themselves over the years, it was difficult to obtain complete data on the trend in the expenditures in the ADA divisions for more than two years.

3. Also limiting the work was the amount of time and other resources

4. The methods for analysing the data are experimental in the field of economics. There is not much literature on these methods and existing works touch only on some of the general solutions to problems. The research work was, therefore, prepared with much trial and error.

CHAPTER II

REVIEW OF LITERATURE

Agricultural Policy vs Public Policy

Hallett observes that "Agricultural policy, like any other aspect of economic policy, depends in the last resort on certain political objectives." [116] In Heady's [124] view, agricultural policy developed in the United States as a public policy. Schickele [192] states that: "The formulation and implementation of agricultural policy are primarily matters of legislative and administrative government action." Hathaway [120], like Tweeten [224] also notes that: "The underlying drive for our farm policies arises from a complex set of 'beliefs' and 'values' that exist regarding our society and the role of agriculture in it."

The Policy Sciences and Policy Analysis

The context for studying agricultural policy is provided by "policy sciences" and "policy analysis". The policy sciences, according to Lasswell, "study the process of deciding or choosing and evaluating the relevance of available knowledge for the solution of particular problems." As a method, it integrates philosophy, history, science, prophecy and commitment. [140] Policy analysis, on the other hand, has been expressed by Wildavsky and Yehezkel Dror [104, p. 462] as a procedure in which:

1. Much attention is paid to the political aspects of public decision-making and public policy-making (instead of ignoring or condescending regarding political aspects).
2. There is a broad conception of decision-making and policy-making (instead of viewing all decision-making and policy-making as mainly a resource allocation).
3. Emphasis is on creativity and search for new policy alternatives, with explicit attention to encouragement of innovative thinking.
4. There is extensive reliance on qualitative methods.
5. More emphasis is placed on futuristic thinking.
6. Condition of analysis is much looser and less rigid, but nevertheless systematic. There is a recognition of the complexity of means ends interdependence, the multiplicity of relevant criteria of decision, and the partial and tentative nature. The concept of policy in policy analysis is that policies are goals, objectives, and missions that guide the agency.

Models of Problem Solving, Decision-Making and Policy Formulation

The policy sciences and policy analysis deal with two general categories of problems. In one, models about the topmost hierarchy of policy-making are constructed in an attempt to provide insight into the policy-making process, to generate hypotheses concerning the behaviour of policy-makers and to develop new frameworks to improve policy-making processes [71]. In the other, models of decision-making and policy formulation examine the actual functioning of such processes. The methods in this second class have been termed the case study approach. In this approach interests center on objective analyses of specific policies like defence policies, foreign policies, health policies, labour policies, agricultural policies, etc. Both systems also seek improvements in their methods of study of policy problems.

The basis for identifying these two classes appears to rest on the extent of knowledge about the decision-making situation [51; 199; 200]. Braybrooke and Lindblom [51] contend that our concepts of problems determine our ideas on decision-making, policy-making, policy analysis, and problem solving. In their view, the approach to policy study may be either intellectual and theoretical or political and empirical. Theoretical models, according to them, are evaluative and may be subdivided into four groups, viz:

1. Naive Concepts. These are simple statements of a few general values like security, employment and price stability with the belief that these announcements are sufficient and necessary to allow complete evaluation and recommendations on the choice of actions on issues. Braybrooke and Lindblom argue that such simple criteria are primitive and do not help in reconciling conflicts in values and in arranging these values in order of their priorities. They are also not helpful in providing a clue to source, history and relevance of the avowed values.

2. The Naive Priorities Method. Braybrooke and Lindblom say this is an improvement over the naive criteria method. It ranks policy but it does not indicate the method of choosing specific policies and the reason for doing such ranking.

3. The Rational-Deductive Ideal. This is identified as "the ideal of a complete deductive system . . . as a way of organizing knowledge." It is an approach requiring a complete or comprehensive view of all the elements of the policy problem, and advances that if the goals of policy can be expressed as ultimate values, general principles, and hence intermediate ones, can be formed about these

values. These intermediate values may then be stated as hypothetical propositions that will rank their embodied intermediate values and thus will provide in an exact manner the interrelationships among values. The criticism passed on this model is that it is not practical. It requires an amount of information which is prohibitive in cost and human effort. It is therefore applicable to small policy problems which rarely occur and is useful only in mastering the uncertainties of evaluation on the values side.

4. The Welfare Function. Braybrooke and Lindblom submit that the four models of decision- and policy-making as listed above do not examine policy issues in their political context and are therefore not very practical for the real world of incremental politics. They propose a model of disjointed incremental decision-making which is more realistic than any of the above four models. The relationship between this model and the other models is given in Table 2.1.

Their model of incremental decision-making has been dubbed as "muddling through" [90, pp. 154-173]. In the form of incremental budgeting, Schultze [196] contends that it is pernicious, for disjointedness in decision-making implies trusting to luck and that at some point in time and place, chance will bring about the right decision. Shackle states that: "the ground for supposing knowledge insufficient is a part of knowledge." He adds that: "Policy evidently means some guidance laid down in advance for conduct and action." Such guidance can be either detailed in its prescriptions for both present and future or be "a vague and loose indication of ends to be sought and types of action which may or might be adopted, leaving a great weight of discretion and judgement on the operator

TABLE 2.1

TYPES OF DECISION-MAKING

	High Understanding	
Incremental Change	Quadrant 2 Some Administrative and "Technical" Decision-Making Analytical Method: Synoptic	Quadrant 1 Revolutionary and Utopian Decision-Making Analytical Method: None
	Quadrant 3 Incremental Politics Analytical Method: Disjointed Incrementalism (Among Others)	Quadrant 4 Wars, Revolutions, Crises, and Grand Opportunities Analytical Method: Not Formalized or Well Understood
	Low Understanding	Large Change

Source: David Braybrooke and Charles E. Lindblom. A Strategy of Decision: Policy Evaluation as a Social Process (New York: The Free Press, May, 1967), p. 78.

of the policy" [199]. But because detailed guidance assumes a complete knowledge of all probable future circumstances and because it is not possible to be fully certain on such circumstances, policy must legislate for uncertainty. Thus: "To command loyal and resolute endeavour it must offer some presumption of being able to cope with a situation which cannot be foreseen in detail" [199]. Too, it is Schackle's view that if the statement of policy sufficiently reflects the fact that choice has to be made without sufficient knowledge, then it is possible to order particular policies or meanings of policy on at least two axes. On one axis policies will be ordered with reference to the degree of discretion allowed to the administrator, and on the other axis, according to the range of diversity of outcomes.

He, therefore, believes that a concept of potential surprise:

> . . . enables the policy maker to determine precisely, for himself and others, what the policy is prepared for and is not prepared for. Within its ranges of no surprise, or low-surprise, the policy must lay down exact responses or define the administrator's range of choice. When events fall outside those ranges, the policy maker must reexamine his premises and build his policy.

Shackle's description of policy is graphically depicted in Figure 2.1.

FIGURE 2.1

CLASSIFICATION OF POLICY ACCORDING TO THE CONCEPT OF POTENTIAL SURPRISE

Degree of Subdivision of Range of No Surprise	Clarified	Capacious
	Prescriptive Policies	Prescriptive Policies
	Clarified Discretionary Policies	Capacious Discretionary Policies

Width of Range of No Surprise

Source: G. L. S. Shackle. Decision, Order and Time (London: Cambridge University Press, 1969), p. 282.

The region of low surprise constitutes "capacious policy", and the "presence or absence of subdivisions within these ranges, and of exact prescription of the response to events falling in each subdivision, makes a policy respectively discretionary or prescriptive." The term "clarified" refers to "a table or curve connecting values of some outcome variable with the degrees of potential surprise assigned to these values." In his explanation the range of no surprise can be narrowed by improvement in the decision maker's basis of expectation, either through new knowledge or the reinterpretation of data. Expectation, he adds, varies in "complexity, consistency, clarity,

precision, scope and degree of detail of situations or transforms of situations assigned to future dates."

And complexity defines:

> . . . multiplicity of the variables involved in the description of some situation or of the transforms of that situation into another; variety, subtlety and intricacy of the functions connecting such variables, imprecise matters such as colour or emotion; psychic entities of a still more elusive kind such as a judgement of beauty [199].

Nevertheless, Shackle concedes that it is only possible to go into that degree of detail adjudged to be contingent on the issues at stake. Although he admits the charge that economic decision-making is value oriented, he is convinced that "valuation and the market together compose that mechanism which renders economics a proper object of scientific study, as distinct from aesthetic appraisal, and gives to it its own distinct and peculiar individuality." And, "policy concerned with market valuations thus has a character of incisiveness which gives it some advantage for the study of the nature of policy in general." Hence, the idea of rationality which Braybrooke and Lindblom reject in systematic analysis is to Shackle only a matter of being able to avoid explicit inconsistency between different facets of an activity.

Doern and Aucoin also observe that "in formulating policies that establish the context for future policies, policy makers do often behave in a non-incremental manner" [76]. They have certain perceptions of the importance of their decisions. And it is the interaction between these, and the society's perceptions about the policy makers' decisions that produce fundamental policy issues in the modern political system. The problem is therefore not whether

a future policy analyst sees all change as incremental. What is important is that "policy makers at different points in time see themselves as participating in a process dealing with fundamentally different policy alternatives." Doern and Aucoin underscore the need for models about the attitudes and perceptions of policy makers, and have examined the models of Amitai Etzioni and Theodore Lowi for their responses to this need.

In his mixed scanning model, Amitai Etzioni attempts to draw the line between fundamental or contextuating policies and incremental or bit policies. The model is seen as a combination of the rational ideal and the incremental model. However, it is less comprehensive than either the rational deductive or the synoptic ideal. Compared to the incremental model, it is known to reduce reversibility in decisions. Doern and Aucoin comment that the model does not resolve the problem of distinguishing between the fundamental and incremental [88; 76].

Lowi's model, as observed by Doern and Aucoin, first examines and classifies the various policies in existence and then relates them to the types of political decision-making processes thought to be their sources. Policies in this model are classified into three main types: (a) Distributive; (b) Regulatory and (c) Redistributive. Distributive policies have been referred to as highly individualized decisions and are described as policies only when they are present in large numbers. They are also described as a type of policy in which "the indulged and the deprived, the loser and the recipient, need never come into direct confrontation." The weakness in this model is traced to its assumption of unlimited or adequate resources

to meet the demands of the individuals concerned. It also presupposes a direct link between an individual and the government or the policy maker [187; 76].

Regulatory policies, on the other hand, are quite discriminatory and selective. They rest on the belief that resources are scarce.

Redistributive policies are similar to regulatory policies. They differ, however, from the regulatory and the distributive because they do not affect as many individuals or groups. Secondly, the groups affected may be simply classified as the rich and the poor.

Using these classifications, Lowi is observed to associate distributive policies to "politics of non-interference." This type of decision-making is likened to "pork-barrel patronage politics." Examples of policies in this class are industry tax exemptions, government contracts and services, development schemes and government support for education and research. Regulatory policies, on the other hand, arise from group conflict. The society is polarized into two distinct groups. Each group hopes to be able to push forward its demands in a competitive environment. Regulatory policies are marked by intense competition among groups for some common good or service which cannot be available to all or shared on an equal basis. Redistributive policies, however, are associated with a type of group conflict involving the "elite" or the ruling class and the commoners or the "counter elite." Since a large number or organizations and associations are involved in this conflict, the power structure formed is known to be more stable and permanent over time than distributive or redistributive models [76, pp. 19-21].

All the models discussed above have evolved from a greater consideration of the political and social contexts of decision- and policy-making. The following group of models put more emphasis on the economic and technical aspects, although political and other views are not overlooked. These policy models have been described as the systematic approach to decision-making. Braybrooke and Lindblom observe that in this class of analytical models, decision-making, policy-making, policy analysis and problem solving are all equated.

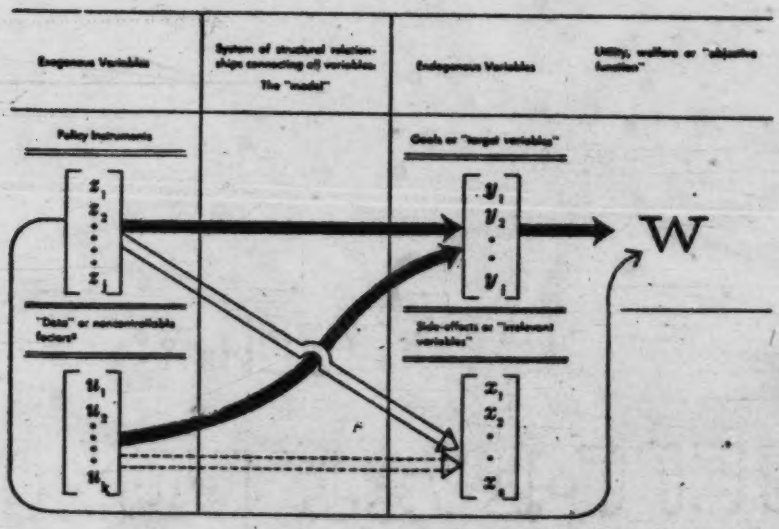
Tinbergen [218; 219; 220] provides the basis of these analytical methods and refers to economic policy as "certain acts of economic behaviour" which are "directed towards the maximalization of the ordinary ophelimity functions." In a restricted sense, he defines policy as the economic behaviour of organized groups, typified by trade unions, agricultural or industrial organizations, etc., for the maximization of some collective ophelimity function. And "in its most specific and most relevant sense, economic policy refers to the economic actions of governments for the realization of the general interest. This general interest is related to some desired quantifiable goals, also called target variables. Hence, economic policy is the deliberate variation in means in order to attain certain aims. Tinbergen provides an outline of the procedure for analysis of economic policy and states that the theory of economic policy uses the tools and theories of conventional economics. However, conventional economic analyses alone are not sufficient for full treatment of the problems of economic policy. Extra economic factors need to be considered in the choice of aims and means [218]. He classifies economic policies into: (1) Reforms; (2) Quantitative policies, and (3) Qualit-

ative policies.

Tinbergen's idea of the theory of economic policy has been illustrated by Fox, Sengupta and Thorbecke [947] (Figure 2.2).

FIGURE 2.2

THE THEORY OF ECONOMIC POLICY



Source: K. A. Fox, J. K. Sengupta, and E. Thorbecke. The Theory of Quantitative Economic Policy (Chicago: Rand McNally, 1966), p. 21.

They find Tinbergen's approach to be primarily taxonomic. The classification of policy variables into targets and instruments is said to be not absolute and does not allow the development of new, useful and more general hypotheses. They further note that Tinbergen's theory: (a) deals only with the characterization phase of the policy problem and neglects the selection and steering phases; (b) omits some recent and important developments in policy-making along the lines of business management, decision-making, inventory control, programming under uncertainty, parametric variations and learning

models incorporating adaptive control; (c) does not explain sufficiently why and how the preference function is specified in its alternative parametric forms and the classification of variables into targets and instruments; (d) does not cover "the two classic justifications of welfare economics for government interference--economies of scale and the absence of markets to mediate external effects in certain areas" [94, pp. 30-33].

In its eighth annual review, Design for Decision Making, the Economic Council of Canada stated that policy objectives are established through prior choice of alternatives and in the arrangement of these alternatives in their preference-ordering. These objectives are at the highest level of decision-making, general statements of intent to achieve some particular goals. But to be operationally relevant, they maintain that these objective statements must be more specific than mere goal perceptions. In their opinion, discussions about goals are usually too vague and philosophical to provide a solid basis for identifying policy objectiveness [83, p. 66].

Other Models of Systematic Analysis in the Theory of Economic Policy

Although not employed in this study, the following list includes some of the important systematic and quantitative decision-making procedures and models in the theory of economic policy:

(a) Systems Analysis [35; 152; 65; 126; 89];

(b) Simulation [97; 27];

(c) Planning, Programming and Budgeting (PPB) [128; 195];

(d) Cost-Benefit Analysis (CB) [122];

(e) Management by Means or Controls;

(f) Program Evaluation and Review Technique (PERT) [118];

(g) The Critical Path Method or Management by Exception [137] and the variations in (f) and (a) which cover Critical Path Scheduling (CPS); Least Cost Estimating and Scheduling (LESS); Program Evaluation Procedure (PEP), etc.;

(h) Input-Output Analysis [186];

(i) Control Theory [64; 94];

(j) Graph Theory [49; 34];

(k) Sensitivity Analysis [94; 77].

Identification and Classification of Methods in Social and Scientific Research which are Relevant to the Study of Economic Policy

Detailed explanations and conditions of application of the various methods in scientific and social studies which are of significance to the study of the theory of decision-making, and hence of economic policy, are contained in standard works [186; 192; 117; 104; 124; 127; 233]. However, it is relevant, in this review to examine only the "Matrices of Discovery Method" as given in Kaufmann's Table of Summary of Methods and their application[1] [149, 37-38].

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[1] For the rest of the methods see Kaufmann, Arnold. The Science of Decision-Making. London: Weidenfeld and Nicholson.

TABLE 2.2

METHODS AND THEIR APPLICATION

Method	Brief Description	Example and Application
Matrices of discovery method	Universal method permitting a rationalised study of the field of possibilities. A square table or matrix is made up giving the reactions of studied features in relation to each other. Can be generalised into hypercubes when one looks for the reactions of features when n is greater than 3.	Mendeleev table. Economic or sociological interactions. Problems of information in business. Factorial analysis.

The Theory of Agricultural Policy

Agricultural policy as a sector policy of the general economic policy is identified by the special characteristics which mark agriculture from the other sectors of the economy. Tinbergen [218], for example, has listed eight special features of agriculture common to all economies. Seven of these are:

(a) The existence of random fluctuations in production that cannot be foreseen and usually create a deviation between intended and actual production.

(b) A low elasticity of supply--prices cannot exert a short-term influence on the volume of product available, especially crop products.

(c) A low elasticity of demand--prices cannot, in the short run, exert much influence on the quantity demanded, particularly of food.

(d) A time-consuming production process--crop products often take more than half a year, some even much more, whereas meat and

dairy products, as far as being dependent on the number of livestock, also require years, sometimes many years.

(e) The existence of seasonal fluctuations of different types.

(f) In many western countries agriculture is a well organized industry, able to carry out a number of measures of regulation, either of prices or of production of trade.

(g) Usually land is in short supply.

Discussions on agricultural policy in the western world are in the framework of a democratic system with an open economy and a laissez faire economic policy in which there is a degree of government involvement in the agricultural industry. The models of decision-making and agricultural policy formulation are based on the conventional approaches of economic policy study and policy formulation. Some of these methods have been listed and discussed before. However, in making deductions from these analyses and in formulating agricultural policy, the attributes of agriculture are considered.

In this thesis the method of agricultural policy analysis is systematic and quantitative. Analysis is also within the democratic system of government and with a fair amount of government involvement in agriculture.

The Matrix Method Used in This Thesis

The matrix method is both systematic and taxonomic in its approach to economic policy analysis. It is a convenient tool for compacting multidimensional data and for simultaneous manipulation of these data. Matrices have been employed to study the problems of economic optimization. They have been used in linear, static and

dynamic programming, and in competitive and cooperative decision situations of game theory. They have also been applied in the theory of organizations and in those groups of economic problems which fall under graph theory, multivariate analysis [68; 69; 70; 50; 86; 222; 188; 31; 40] and systems analysis [35].

Matrix concept. The concept of a matrix can be related to a vector space and also to an Euclidean space [243]. These spaces define the multidimensional nature of variables. The variables refer to the attributes and entity sets or categorical sets in which measurements or observations are recorded for the purpose of describing and investigating the structure and behaviour of a particular phenomenon. Concisely, a matrix has been defined as a row-by-column arrangement of figures or symbols. In a two-dimensional space it is a rectangular array of figures [243; 50]. The construction of a matrix for multidimensional data analysis is based on the fundamental ideas and processes of definition, classification, quantification and comparison [138].

Disadvantages of the matrix approach. The difficulty in matrix application is in the cost of construction. Matrix use requires a complete understanding of the components of an issue for which analysis is required. It demands information which must be sufficient in both quantity and quality. Second, the cost of analysis is usually high because many analytical techniques must be applied to the matrix structure to confirm the relevance and reliability of results.

Suitability of the matrix method to the problem in this thesis. The thesis problem is one of completely identifying, listing,

categorizing and fully characterizing in terms of all identifiable attributes, both measurable and qualitative, the agricultural policies pursued in Alberta in 1972. It also involves analysis of the interactions between these policies in relation to their level of consistency in aims and means.

The mass of information (in both quantitative and qualitative forms) needed for analysis can only be adequately handled in a matrix. Secondly, the requirement for simultaneous operation on data and the nature of results which need to be extracted in order to make inferences about agricultural policy in Alberta in 1972 make the matrix approach relevant. Thirdly, there are conventional tools for analysing matrix data. Regression analysis, factor analysis, discriminant analysis, simple percentage calculations and ordinary arithmetic procedures are all suitable for studying the informational content of the matrix used in this thesis. The recent work of U.S. Geological Survey, A Procedure for Evaluating Environmental Impact, illustrates how a data matrix may be constructed and manipulated through simple arithmetic computations to make deductions about important economic policy issues affecting the environment [159]. This work also has some similarities to the type of analysis being carried out in this thesis. Fisher's study [93] on the characteristics of the Iris flower and the research of Eisenbeis and Avery [89], Rummel [188], Horst and Rao [183], Cooley and Lohnes [69; 70], Tatsuoka [208], and Adelma and Morris [3] are some of the matrix analyses used to provide needed guidance [138].

CHAPTER III

THE TAXONOMY OF ALBERTA AGRICULTURAL POLICIES AND PROGRAMS-- A MULTIPLE ENTRY CLASSIFICATION

Procedural Steps

A multiple entry classification system for the 1972 agricultural policies in Alberta was prepared in a matrix form. The design and construction of the matrix structure involved some basic steps. These are described in order as follows:

1. Identification and collection of sources of information. In this step, sources of information on policies were sought, identified, listed and then coded as shown under "Field" 5 to 15 in Table 3.2.

2. Identification of the methods for analysing matrix data which were relevant to the type of issues at stake. Since techniques of multivariate analysis were available, the design and the construction of the matrix table were to conform to these methods. Also, the possibility of analysing data by simple mathematical and conventional statistical methods forced consideration of the structure of the matrix that would enable data extraction and data analysis.

3. Identification and coding of the structure of the Alberta Department of Agriculture. The structure of the ADA was taken as given in the 1972 Annual Report of the Department [11, p. 2].

TABLE 3.1

POLICY INFORMATION MATRIX: IDENTIFICATION, ATTRIBUTES, RELATIONS AND INFORMATION SOURCES

Field (1)	Name (2)	Type of Information (3)	Code Character-istics (4)	Length of Code (5)
1	Serial Number	Identification	N, I, E	3
2	Identification Code	"	A, I, E	6
3	Administrative Level	Attribute	N, O, E	1
4	Locus of Policy	"	N, I, E	1
5-15	Source of Information on Policy	Source of Inf.	N, B, E	11
16	Hierarchical Relation	Attribute	A, I, E	6
17	Cross Relation	"	A, I, M	6
18	Functional Type	"	N, I, E	1
19	Agricultural Aspect Affected	"	N, I, E	1
20	Producing Sector Affected	"	N, I, E	1
21	Spatial Affect	"	N, O, E	1
22	Mode of Execution	"	N, I, E	1
23	Appropriation Number	Identification	N, O, E	4
24	Funds Actually Spent, 1972-73	Attribute	N, C, E	7
25	Funds Actually Spent, 1971-72	"	N, C, E	7
26	Funds, Percentage change in above	"	N, C, E	4
27	Occupied Positions: Professionals	"	N, C, E	3
28	Occupied Positions: Others	"	N, C, E	3
29	Occupied Positions: Salaried	"	N, C, E	4
30	Occupied Positions: Wage	"	N, C, E	2
31	Possibility of Measuring Achievement	"	N, O, E	1
32	Short Name of Policy	Identification	A, I, E	-

(1) Field: Number of data field or column number in matrix
(2) See page
(4) Code Characteristics (for data handling and analysis):
First letter: A = Alphanumeric
N = Numeric only
Second letter: Logical nature of code
C = Cardinality (equidistant relation of values)
O = Ordinality (rank relation without distance info.)
I = Indicative (indicates differentness; no systematic relation between symbols assumed; codes are "names")
B = Binary: indicates presence or absence
Third letter: E = Exclusive code (a policy attribute is described by a single code)
M = Multiple code (a policy attribute is described by one or more codes).

TABLE 3.2

POLICY INFORMATION MATRIX:
POLICY ATTRIBUTE CODES

Field (1)	Name (2)	Attribute Code (3)
1	Serial Number	1 to 528
2	Identification Code	ANNNNP
3	Administrative Level:	
	Minister, Cabinet, Deputy Minister, Assistant Deputy Minister	1
	Division	2
	Branch	3
	Section	4
	Admin. Board, Commission, Council	5
	Citizen Board[b]	6
4	Locus of Policy:	
	Alberta Government (Cabinet)	1
	Alberta Department of Agriculture	2
	Alberta, Other Departments	3
	Federal Government (not used)	4
5-15	Source of Information on Policy (See [8]; [11]; [16] to [20]; [23]; [104] to [111] in Bibliography.)	Logical code[c]
16	Hierarchical Relation	ANNNNP[d]
17	Cross Relation	ANNNNP[e]
18	Functional Type:	
	Regulatory	1
	Advisory	2
	Distributive	3
	Resource Access and Terms	4
	Promotional	5
	Administrative and Others	6
19	Agricultural Aspect Affected:	
	General or more than one	1
	Production	2
	Marketing	3
	Infrastructure	4
	Income and Rural Life	5
	Rural Institutions	6
	Human Resources	7

TABLE 3.2 continued

Field (1)	Name (2)	Attribute Code (3)
20	Producing Sector Affected:	
	General or more than one	1
	Crops	2
	Animals and Animal Products	3
	Specialty Crops	4
	Horticultural	5
	Specialty Animals and Animal Prod.	6
	Others	7
21	Spatial Effect:	
	Entire Province	1
	Part of province, regions	2
22	Mode of Execution:	
	Direct, by Dpt. of Agriculture	1
	Jointly with other govt. departments	2
	Joint Federal-Provincial	3
	By municipal governments	4
	Direct by other prov. departments	5
23	Appropriation Number:	NNNN[f]
24,25	Funds Actually Spent:	Dollars
26	Funds, Percentage Change:	±NN.N[g]
27-30	Occupied Positions:	Number of Persons
31	Possibility of Measuring Achievement:	
	Quantitatively measurable in terms of stated objectives or goals	1
	Quantitatively measurable by intermediate operating results	2
	Public Opinion (measurable by survey)	3
	Subjective assessment or ranking	4
	Intuitive assessment, qualitative	5
32	Short name of policy	English

[a] Identification Code is structured ANNNNP, where A refers to alphabetic character indicating areas of responsibility of Ministers, Deputy and Assistant Deputy Ministers, NNNN is a four-digit numerical code uniquely identifying units of government organization, and P is an alphabetical character identifying stated policies associated with the government organization.

TABLE 3.2 continued

[b] Members elected by constituents rather than appointed.

[c] Logical code: 1 = source used, 0 = source not used.

[d] Hierarchical Relation: the code form is identical to that of #2. The code is that of the government organization immediately above the one in question; i.e., the one of which the identified one is an integral part, or the official to which it reports.

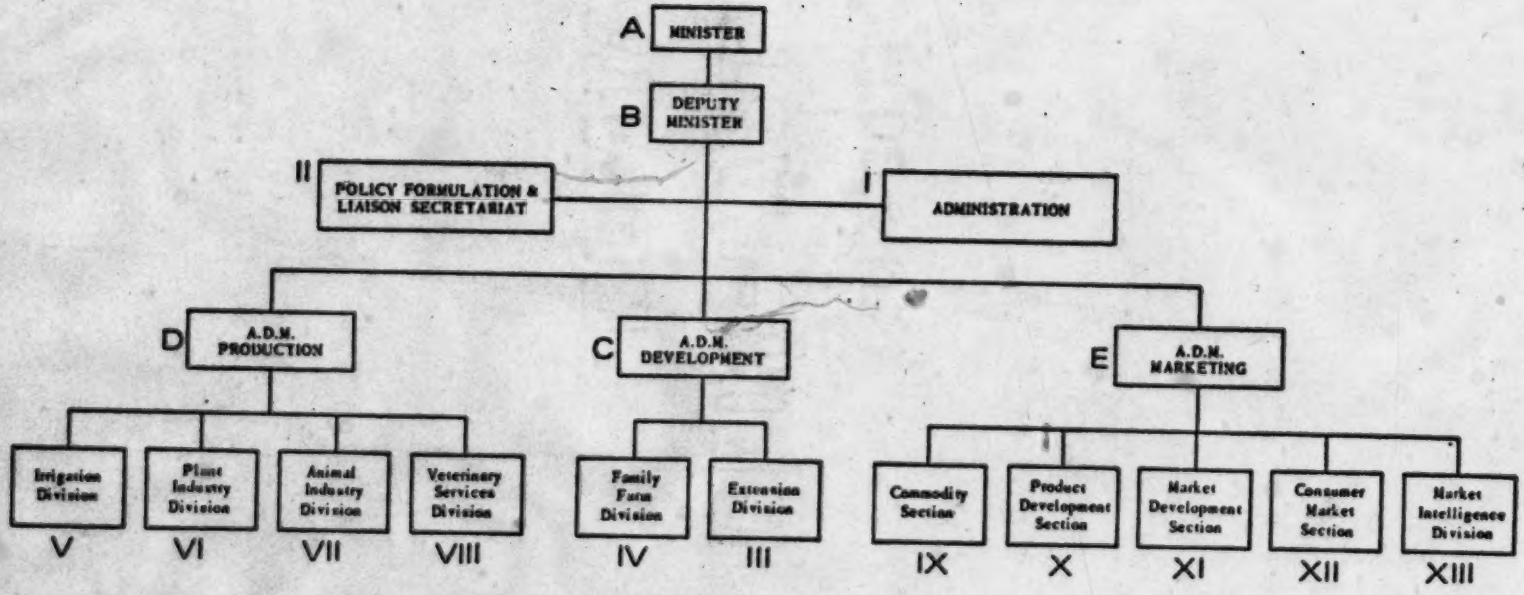
[e] Cross Relation: the code form is identical to that of #2. This is the Identification code of a policy which appears to be identical, similar, or closely related in objective or function, to the one being described.

[f] Appropriation Number from ALBERTA. Estimates of Expenditures 1972-3. (four digits).

[g] Percentage calculated to tenths of a per cent.

FIGURE 3.1

THE ORGANIZATIONAL STRUCTURE OF THE
ALBERTA DEPARTMENT OF AGRICULTURE, 1972



Source: Alberta Agriculture. Annual Report 1972 (Edmonton: ADA, 1972), p. 2.

Identification codes were assigned to the various segments of the Department, as shown in Figure 3.1. The order of coding followed the order of the individual divisions' reports in the Annual Report. In Figure 3.1 letters were used in naming those divisional groups under the Minister, the Deputy Minister and the Assistant Deputy Ministers. For subdivisions under these major groups, roman numerals were used.

For the other government departments, a continuation of the capital letter naming system used for ADA was employed in coding. There was no reference to the structure of these bodies. Although coding by structure was possible, it was not considered necessary in this work.

4. Identification of the individual agricultural policies of the ADA and those of other government departments with considerable influence on agriculture. The 1972 Annual Report and the three public accounts books, Public Accounts of the Province of Alberta for the Year Ended March 31, 1972 and March 31, 1973 [106]; Estimates of Expenditure-Income Accounts, 1971-72, and 1973-74; Estimates of Expenditure-Capital Accounts, 1971-72, and 1973-74 [106], were examined for the individual objectives which form the focus of activities of the various sections of the Department. The statements embodying these objectives were identified as the operational policies. With respect to the other government departments, policies were identified and selected if they were believed to have an impact on agriculture or if they expressed a degree of agricultural orientation.

5. Breakdown of policy statements into single objective and single means or instrument. Policy statements were disaggregated in a way which allowed identification of single objectives and con-

currently into single means or policy instruments. Short names were given to each separate policy statement as listed in Appendix B. A single statement which carried two contrasting objectives was separated into its appropriate parts and then studied individually in terms of their contributions to the objective of the section or division in which they occurred. The public accounts books [109] were used to help match policies with the funds voted on their implementation. They also helped to place policies into groups according to the budgetary expenditures. This procedure helped to assess the various attributes of units of policy. Secondly, this method allowed a clear study of the types of relations that could exist between policies.

6. Final coding of agricultural policies of the Alberta Government. The disaggregated policies or the objective statements of ADA were coded according to the format provided by the "Policy Attribute Codes" list in Table 3.2 and as given in Appendix C. Each policy and structural unit is represented on one row of the "Policy Matrix Table." The serial number (field 1) facilitates comparison with the list of policy names and statements (Appendix B)

7. Checking and correcting errors. In the process of matrix analysis and sorting of policies according to attributes each error was exposed and corrections in the General Matrix Table were made possible.

The Coding System for Identifying Policies and Policy Attributes

The coding system of policies is an attempt to translate qualitative attributes of policies into machine-readable symbols for further manipulation. The codes were compiled in a General Policy

Matrix (Appendices B and C) which contains all 528 identified policies, and a Derived Matrix (Table 4.4) of selected policies.

Codes are descriptors associated with each policy. They describe various aspects of the policy in shorthand. Table 3.1 lists 32 descriptors in the order in which they were arranged in the coding process. Table 3.1 provides the following:

(1) Field. The field designates the data field or the column of the General Policy Matrix and corresponds to a "variable" as defined in SPSS [173, p. 15].

(2) Name. A descriptive name, chosen for each attribute.

(3) Type of information. Descriptors are sub-divided into "Identification," codes that identify individual policies, facilitate cross reference between tables and lists, and serve other general housekeeping purposes. "Attributes" indicate various aspects of a policy. "Source of information" refers to public documents from which the policies were identified.

(4) Code Characteristics. This information was provided to identify the logical nature of the code, to facilitate data processing, and to indicate which statistical procedures it would be permissible to apply to the coding symbols. While numerals were used throughout, not all number codes satisfied the requirements of cardinality. Only dollar amounts and staff numbers (fields 24 - 30) would be additive. Several attributes (3, 21, 23, 31) would be ordinal in nature; the numeral codes indicate a rank along some attribute axis without conveying information on the relative distance between values. Most attributes are simply indicative. Each code distinguishes a policy as a member of a distinct subset, but conveys no information about

relative location or absolute distance. Each indicative code is merely a symbolic name. A simple binary or logical code was employed in fields 5 to 15. A 1 (or logical true) indicated the presence of the attribute, a 0 (or logical false) indicated its absence.

An attempt was made to construct the code so that one code would identify the attribute exclusively. When necessary, multiple characteristics were redefined so as to establish a new descriptor. "Cross Relations" (field 17) could have occurred in multiple, i.e. a policy could have been related to more than one other across the policy set. Since only a few multiple cross relations were identified, it was decided to code only one of those identified cross relations, for the sake of simplified processing.

(5) Length of code. This information served to facilitate data processing. The nature, use and characteristics of identification and attribute codes employed in this study are discussed now in detail. The numbers preceeding each refer to the field number in Tables 3.1 and 3.2.

Identification Codes

(1) Serial number. The use of serial number facilitates quick description of a policy or any set of policies without having to write down either the code name or the full name of policy or policies. Because of later additions and because it was necessary to break down further some of the policies the serial order of policies were disturbed. Using an SPSS program [173; 174] for sorting a new order was created.

(2) Identification Code. In the second column of the "General

Matrix Table" (Appendix C) are the "Identification Code" names of these policies. The first capital letter of the "Identification Code" indicates the major subdivision in the ADA structure from which the policy originates. The digits which follow the letter identify the code or the numerical name of the sub-divisions. The capitalized last letter in the policy code identifies a specific policy in each sub-division. For example the first A (see serial numbers 1 to 7 in the "General Matrix Table", Appendix C) means the Minister. The accompanying four zeros identify the Minister's Office, without sections or subdivisions. The last letters A, B, C say that there are three policies at the Minister's level. Similarly, the B of the serial numbers 8 to 41 means the Deputy Minister level. At the serial number 9, code 100 must be understood as the first sub-division under the Deputy Minister, General Administration. The 100A names the first policy of this sub-division. The sequence (serial number 38) 200 stands for two sub-divisions under the Deputy Minister, and 200A, 200B, 200C are three policies identified under this second sub-division.

Policies in the other government departments which were related to agriculture were coded only at the Minister's level, without embodying the individual structures of these departments in the code. The first capital letter of the "Identification Code" indicated the department, and the numbers which follow it gave the name and the number of policies under the organization. These policies begin with the serial number 393.

(23) Appropriation Number. Used as found in the 1972-73 and 1971-72 Public Account [109] and Estimates of Expenditures [106] of Alberta. The appropriation numbers facilitate comparison of "single policies"

with the budgetary policy and organizational entities as defined by the government.

(32) Short Name of Policy. A brief phrase or descriptive statement of each identified policy. For practical reasons the names were not included in the "General Policy Matrix" but are listed in Appendix B. While serving as identification, the name actually carries descriptive information and might well be considered a form of attribute as well.

Attribute Codes

Attribute codes carry the substantial information describing various aspects of a given policy, viz. its attributes. Some of the attributes, like administrative level, locus, hierarchical relation or occupied positions are quite objective but, unfortunately, do not describe adequately the nature and significance of a policy. A number of additional conceptual categories were chosen to describe more relevant aspects of policies. The policy characterizations embodied in these attribute codes should ideally be verified by replicating the task by several people. This was beyond the scope of this project; the codes represent the author's best efforts, but are subject to modification.

Table 3.2 provides a systematic key to attribute codes.

(3) Administrative Level. This refers to the administrative level at which the policy was identified. Level 1 was everything down to the level of Assistant Deputy Ministers, level 4 identified the lowest level within the administrative organization. Levels 5 and 6 refer to Boards, etc. with some administrative discretion, operating outside the structural hierarchy, but reporting to level 1.

(4) Locus of Policy. This codes policies with regard to the nature of the policy "carrier": Provincial Cabinet (referring both to its official function as "Lieutenant-Governor-In-Council" and as the policy executor of the governing party, the Progressive-Conservative Association of Alberta), the Civil Service of the province, subdivided for convenience into Provincial Department of Agriculture (2) and other Departments (3), and Federal Government (omitted in this project).

(16) Hierarchical Relation. The attribute code recorded is the identification code of the "governing" policy, or more accurately, next higher organizational level to which the "carrier" organization of the policy reports to, or of which it is a part. Each singular policy is related hierarchically to only a single higher-level or governing policy. The hierarchical relation is not reciprocal; a high-level policy may be related to many subsidiary policies. The binary attribute pair (2)-(16) of each policy describe a single link between policies at various levels in the government organization. By reverse-listing of policies the hierarchical tree structure of government policies affecting agriculture could be reproduced.

Underlying the hierarchical relation code is the concept that all policies under review can be linked to a bundle of high-level macro-policies or objectives, the locus of which is Cabinet. Ministers implement these objectives through a hierarchy of policies, which are reflected in the structure of the Civil Service department over which they preside. Within the Civil Service it was assumed that overt organizational structure also reflects the hierarchy of policies. The structure of the department converges to a single "policy" of

the Minister, however. It was not possible to derive a linkage from there to the five macro-policies at the Cabinet level. A procedure was devised to provide the "missing link" (See Chapter IV).

(17) Cross-relation. Cross-related policies were recorded by their identification codes. These cross-related policies were identified as policies possessing similar attributes or relating in complementary or supplementary ways.

(18) Functional Type. This describes the mode by which a policy is executed.

Regulatory, (1)[1]: Policy statements which either explicitly or implicitly are coercive in dictating a marketing, production or any behaviour in the agricultural sector are labelled as regulatory. They are essentially agency administered.

Advisory, (2): Advisory policies are identified with the kind of extension activities which furnish information on agricultural problems to those individuals in farming and agricultural businesses. The recipient of information is not under any obligation to act in some special way. It is solely his duty as to whether or not he will make good use of the information.

Income Distributive, (3): This is the power of policy to promote a fair share in income in the agricultural sector, and also in the general national income by those in agriculture. Income distributive policies within the agricultural industry may thus be directed toward those in the lower quarter of per capita annual income.

---

[1]The number in brackets suffixed to the named attribute is the attribute code as given in Table 3.2.

Addressed to the whole industry vis a vis the non-farm sector income distributive policy seeks to even out the lopsidedness in the share of national income between these two sections of the economy.

Resource Access and Terms, (4): This defines policy to ensure an opportunity and ease in the acquisition of agricultural resources for the purpose of carrying out agricultural activity.

Promotional, (5): This refers to policy which promotes new products, better cultural practices, new and improved technology, etc.

Administrative and Others, (6): Administrative policy is concerned with the routine organization and management of men and women who are engaged on the implementation of other agricultural policies. Others define policies which are somewhat general and cannot be classified easily under any of the groups given in 1 to 5 and also under administrative.

(19) Agricultural Aspect Affected. A policy may influence agriculture in general or in some specific ways. The producing or "commodity" sector affected is coded separately in (20). Where policies effect is "General or more than one" the attribute code is 1. If, however, policy affect "Production" mostly, the code is 2 and et cetera as given in Table 3.2.

(20) Producing Sector Affected. This is a relatively straight forward attribute and has been assigned codes which are self-explanatory.

(21) Spatial Effect. Most policies affect all parts of the province alike (1). Some, however, like policies associated with irrigation (D0500B) or Special Areas (11705A) have an impact only in parts of the province (code 2).

(22) Mode of Execution. Not all agricultural policies are wholly

executed by the Department of Agriculture (code 1) or by other provincial departments (code 5). Departments may jointly administer a policy (code 2) as in C0405D; D0606P jointly with the Federal Government (code 3), as in E1100N, or the execution of a provincial policy may actually rest with municipal councils (Agricultural Service Boards) - code 5, as in C0405E.

Attributes (24) to (30) provide information on budget allocations, expenditures and staffing. These are not available for each of the identified low-level policies. They are normally disaggregated to the divisional level within the department of agriculture. A zero in any of these fields does not imply that no funds or manpower were allocated to the execution of these policies. The zero implies that funds and manpower are subsumed under a higher-level policy, which can be traced by means of the hierarchical relation (16).

(24) Funds Actually Spent, 1972-73. Source: [106], Table 3.2 and Appendix C

(25) Funds Actually Spent, 1971-72. Source: [106].

(26) Funds, Percentage Change (between fiscal years above). Calculated as a percentage change from the 1971-72 actual expenditure, the actual expenditure in the latter period, 1972-73 on policy A0000 was .048% above the previous period. The formula used is:

$$100 \left(\frac{\text{1972-73 expenditure}}{\text{1971-72 expenditure}} - 1\right) = \text{percent change}$$

(27) Occupied Positions: Professionals, and (28) Occupied Positions: Others. Source: [11; 45; 106; 109].

(29) Occupied Positions: Salaried; and (30) Occupied Positions: Wage. Same source as above. The last two attributes are alternate breakdowns of the total occupied positions, by division etc.

(31) Possibility of Measuring Achievement. It was clear when this study was initiated that it would not be possible to do an actual comparison of policy objectives with their achievement. Here policies are merely identified as to the possibility of measuring achievement for the purpose of eventual comparison and estimates of effectiveness in terms of stated or implicit goals. Policy 233 (Soil testing services . . .) is stated in such specific terms that its achievement can be measured directly in terms of samples analysed, in terms of acreage sampled, etc. (code 1). The achievement of a policy like 79 (Run regional extension programs, Lethbridge Region) can be documented by operating statistics indicating the number of client contacts, number of short courses, etc., but these measures are intermediate and are not, by themselves, sufficient to assess the degree of goal achievement of such a policy (code 2). The degree of attainment of policy 195, "Promote the apiculture industry", is directly and quantitatively measurable (code 1) by the quality and the level of output of honey and its by products, the annual per capita income of apiculturists and by the relative financial and value of physical assistances given by the government to the industry. But a policy like 192, "Alleviate economic distress through emergency assistance programs", is fully assessed in its effects by sampling "Public opinion" through questionaire survey (code 3).

Construction of the Matrix Table (Appendix C)

The rows: Policies, or in the jargon of factor analysis, entities and their categories, were arranged in the rows of the matrix.

The columns: The columns represented the attributes of these policies.

Size of the matrix table: This is defined by the number of rows and the number of columns. The number of rows is 528 and the number of columns is 31. Hence the size of the matrix table may be written as 528 x 31.

Rank of the matrix: Rummel notes that the rank of a matrix can have several definitions. However, in the vector space approach to factor analysis, he states that: "The rank of a matrix is the maximum number of linearly independent column of vectors in the matrix" [188].

Rummel also provides the following additional definitions as those which are found to convey a meaning similar to the vector space definition of rank above. These are:

1. The maximum number of linearly independent row vectors.
2. The dimensionality of the vector space defined by the matrix.
3. The order of the largest matrix with non-zero determinant formed by deleting rows and columns from the original matrix [188].

CHAPTER IV

ANALYSIS AND INTERPRETATION OF POLICY

Consistencies in Expenditure Patterns With Respect to Functions

With the help of the computer, the general policy matrix was first sorted in order of the absolute size of expenditure estimates for the fiscal periods 1972-73 and 1971-72 and for the various functions of the ADA. Second, percentage change in the rate of expenditures between fiscal years were calculated. Policies or divisional units were sorted according to the size of these rates. These tabulations are too large to be included here.[1] Table 4.1 gives the ranking of the seven major divisions of the ADA according to these amounts and their percentage rate of change for the two fiscal periods. In calculating the percentage rates the absolute amounts for the period 1972-73 were divided by those for 1971-72 and the quotient was multiplied by 100. The manner of calculation is as given in the last column of Table 4.1

Interpretation of Results

By the size of the relative rate of change in the budget estimates for the two periods, 1971-72 and 1972-73 and as given in

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[1] A copy of each of the work tables has been deposited with the archive of the Department of Agricultural Economics and Rural Sociology.

TABLE 4.1

RANKING OF THE SEVEN DIVISIONS OF ADA
ACCORDING TO EXPENDITURE PATTERNS

	Rank by Size of Budget	1972-73 Estimates $	Rank by Size of Budget	1971-72 Estimates $	Rank by percentage Change	Rate of Change $100(\frac{1972-73}{1971-72}-1)$
Extension Division	(1)	2,743,830	(1)	2,012,070	(3)	36.0%
Family Farm Development	(2)	2,331,700	(2)	1,748,690	(4)	33.0%
Animal Industry	(3)	1,834,230	(3)	1,416,960	(6)	29.0%
Irrigation Division	(6)	1,459,420	(6)	1,036,000	(2)	41.0%
Plant Industry	(4)	1,679,230	(4)	1,289,250	(5)	30.0%
Veterinary Services	(7)	1,375,240	(5)	1,175,240	(7)	17.0%
Marketing	(5)	1,587,300	(7)	660,970	(1)	40.0%

Source of Estimates: P. A. Birch, Budget Officer, ADA, correspondence, April 8, 1974.

Table 4.1, the seven divisions were ranked in the following order: Marketing, Irrigation, Extension, Family Farm, Plant Industry, Animal Industry and Veterinary Services. In terms of the absolute size of the estimates for 1971-72, the ranking was Extension Division, Family Farm Development, Animal Industry, Plant Industry, Veterinary Services, Irrigation and Marketing. For the 1972-73 budget the ranking was Extension, Family Farm Development, Animal Industry, Plant Industry, Marketing, Irrigation and Veterinary Services.

Analysis of Association of Policies

Using the policy matrix (Appendix C) investigation of consistencies in the agricultural policy in Alberta in 1972 followed three distinct types of activities.

1. A cross-tabulation or contingency table analysis.
2. Derivation of a matrix employing five main objectives of agricultural policy in Alberta in 1972 reduced the scope of analysis to manageable size.
3. Application of discriminant analysis to the derived matrix (Tab.e 4.4).

Cross-Tabulation Analysis of Attributes

By means of chi-square test of homogeneity it was ascertained whether or not the selected attributes in the policy attribute codes list, Table 3.2, and as used in describing policies in Table 4.1 were independent. The attribute variables 18, 19 and 21 to 31 (as given in Table 3.2 were each crosstabulated with the attribute variable 20, "Agricultural Producing Sector Affected.".

The chi-square test of significance showed that except in the last two contingency tables, the selected attributes for Alberta agricultural policies were independent.[1] In preparing the policy attribute codes listed in Table 3.2, the aim was to provide a mutually exclusive and independent set of attributes which could be used to describe policies in Alberta agriculture. The chi-square test therefore, indicated that this aim has been achieved.

The cross-tabulation study also showed that there was association between policies classified by the "Producing Sector Affected" and those grouped according to the Resource allocation in terms of "wage positions" in the Alberta Department of Agriculture, and the possibility of measuring and evaluating achievement of policy. The significance of the first of these associations is not clear. The association between "Agricultural Producing Sector Affected" and the "Possibility of Measuring and Evaluating the Achievement of Policy" could be interpreted in the following manner. Policies which were directly concerned with a producing sector and had clear cut objectives could be easily measured in terms of their stated goals. Where these policies, however were general and affected more than one objective, determining policy effects would vary according to the level of implementation. A policy with quite diffused effects was more difficult to measure.

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[1] These contingency tables were too bulky to include in the appendix of this study.

The Derived Matrix

In order to carry out a discriminant analysis a derived matrix containing five objectives was prepared (Table 4.4). The five objectives were identified as the most significant in the agricultural policy of Alberta and were: 1. Family Farm Development; 2. Market Thrust; 3. Productivity Increase; 4. Improvement in Farm Income; and 5. Income Distribution. The author assigned five weights to each of the identified 528 policies of the ADA. Each weight indicated the relative importance of the policy to each of the objectives. The sum of the weights assigned to each policy was 55, to reflect the assumption that each policy was equally important and none preceded the other in rank. A low value (minimum 1) indicated low relative importance of the policy for an objective, a high value (maximum, 48) indicated a high relative importance.

Ranking of the five objectives.[1] Summation of the policy weights of each of the objectives over all policies indicates the relative order of importance. It is also possible to rank the policies by the magnitude of their relative importance using one objective at a time!

Discriminant Analysis[2]

Theory of Discriminant Analysis. Ronald A. Fisher is accredited with

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[1] Relative importance is determined as the numerical sum of the attributes as assigned to policy in terms of an objective.

[2] Sometimes the term multiple discriminant analysis is used. William W. Cooley and Paul R. Lohnes use this term in their description of the discriminant function [69].

the development of discriminant analysis in the 1930's [169; 221; 93; 86]. The analytic technique of discriminant analysis is derived from regression analysis and as Fisher states, it is "a valuable application of the technique of the calculation used in multiple regression" [93]. Peter Eckstein commenting on the "Economic Model of Development" by Adelman and Morris, describes the discriminant function as "a method of finding those characteristics which most clearly set off the members of one group from the members of other groups" [82]. Eisenbeis and Avery also state that "the purposes of discriminant analysis are (1) to test for mean group differences and to describe the overlaps among groups and (2) to construct classification schemes based upon the set of m variables in order to assign previously unclassified observations to the appropriate groups" [86].[1]

Thus, like regression analysis, discriminant analysis is useful for both predictive and inferential purposes. In the conventional text books these applications of the discriminant model have been described as classificatory and predictive. The analysis, however, differs from the normal multiple regression analysis in that it is applied to multidimensional data, while regression analysis works on unidimensional attributes or measurements.[2] Eisenbeis and Avery state that discriminant analysis "deals with a specific class of

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[1] As Frank observes discriminant analysis is one of the two ways for treating the problem of limited dependent variables in regression analysis. The other approach is probit analysis [95, pp. 343-346].

[2] In the discriminant function only the predictor variables are measured continuously [82].

statistical problems focusing on the analysis of groups of populations and/or data sets" [86]. Cooley and Lohnes also observe that it is a technique for analysing "several samples from different populations located at different places in a multivariate measurement space, but assumed to be samples from populations with a common dispersion". The interest in such analysis, they add, is "to locate the best reduced-rank model for parsimoniously but effectively describing the measured differences of the groups".[1] Rao identified the problems to which discriminant analysis is applied as belonging to the class of problems "where a priori probabilities are needed for a satisfactory solution and the null hypothesis does not play a prominent part but is sometimes posed to arrive at a decision subject to a small risk". He subsequently subdivides the class into two groups, and hence into two types of discriminant functions of analysis.

In the first subgroup of problems the sets of data or the populations which are to be reclassified are characterized by a multivariate normal distribution, a common covariance (that is, similar dispersion matrix) but different values for the mean vectors. For this category of problems, the simple linear discriminant function of R. A. Fisher is known to be the best tool for analysis. In the second group the problems are described by different dispersions or different covariances and are best studied using a quadratic discriminant

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[1] Paul Horst provides very helpful notes on the rank reduction theorem and its applications in factor analysis. For details on the reduced-rank model in discriminant analysis see Robert A. Eisenbeis and Robert B. Avery.

function [182, pp. 286-289].

Johnston [147] notes that although the use of discriminant analysis is popular in the biological sciences, the analytic technique is nevertheless "potentially fruitful in the social sciences". The econometric model of Irma Adelman and Cynthia Morris [2] incorporates a discriminant analysis in the study of development policies. G. Tintner [221] has also used the discriminant function in his study of prices in the trade cycle, and has shown how the discriminant model may be used to differentiate between producer and consumer goods on the basis of their prices in the trade cycle.

Underlying Assumptions of the Discriminant Functions--A Summary

Eisenbeis and Avery summarize the assumptions behind discriminant analysis as:

(1) the groups being investigated are discrete and identifiable,

(2) each observation in each group can be described by a set of measurements on m characteristics or variables, and

(3) these m variables are assumed to have a multivariate normal distribution in each population.

Some General Problems in Discriminant Analysis

The general problems of discriminant analysis are derived from the difficulty of satisfying the underlying assumptions. Rao [182] lists six of some of the difficulties in the application of the best discriminating solution as:

1. The parameters occurring in the probability distributions are not usually known; thus, there is an increase in errors in classification.

2. It is not always possible to know and even determine a priori probabilities of the best solution.

3. If a priori information cannot be shown to be valid then it is not possible to assign an individual to any of the determined classes.

4. Even by following the best procedure of classification, it may not be possible to assert with confidence that any individual has been correctly classified.

5. There is no standard rule for treating differently one individual or a sample selected randomly from a group from one who is taken from a mixed population.

6. There is no simple rule for obtaining an approximate but practical discriminating function in the event of great need.

Rao, Eisenbeis and Avery provide very helpful practical discussions on these problems.[1] Worth mentioning here is the discussion by Eisenbeis and Avery on the problem of distinctness of groups [86]. The two authors note that if arbitrary groups are formed on the basis of segmenting continuously measurable data, then an infinite number of different but overlapping groups can be had just by "varying the cut-off boundaries demarcating each group only slightly." Thus no group can be considered discrete.

Also, if grouping procedure is not exhaustive, then any classification will equally apply to an individual or a sample.

In their advice on the use of arbitrary classification, it is their view that generally such grouping must be avoided unless: "there appears to be sound theoretical grounds for forming groups or observed discontinuities in an otherwise continuous variable, and the purpose of the study is to describe the groups rather than to predict

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[1] Rao's approach to these problems is quite mathematical. Eisenbeis and Avery [86, ch. 2] provide a non-mathematical discussion on these issues which can be used to supplement Rao's approach.

group membership" [86]. They also refer to other methods like the cluster analysis technique as being helpful tools for constructing groups.

Stating the Results of Discriminant Analysis

Cooley and Lohnes offer the following as the way in which results of discriminant analysis are stated:

1. The number of discriminant functions retained (the rank of the discriminant model) and the relative importance of each discriminant function.

2. The location of each discriminant function as a reference vector spanning a dimension of the selected subspace of the full space, expressed in terms of structure correlation coefficients.

3. The mappings of the groups into the discriminant space, the means and standard deviations of the groups on the functions [69].[1]

Solving the Discriminant Problem

Basically, there are two types of discriminant function, the discriminant function of R. A. Fisher and the quadratic discriminant function. Each of these two types can be used for either a two group problem of classification and other analysis or a k group type of problems, where k exceeds two.

In this thesis analysis was based on the linear discriminant function of R. A. Fisher. Hence, the assumptions about population distribution and about the mean vectors already mentioned were used.

In stating this function for the two group case, Eisenbeis

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[1] For an illustration of their mapping see [69, p. 245].

and Avery [79, pp. 4 & 9] use the following steps:

1. Two samples of data of sizes N_1, N_2 are assumed to be drawn from the same population. These samples satisfy the above mentioned assumptions.

2. In vector notation, the nth observation is represented by mxl column vector of the form: $X'n = (x_{in}, x_{2n}, \ldots\ldots, x_{mn})$ where:

$$n = 1, \ldots\ldots, N_1 \text{ or } n=1, \ldots\ldots, N_2 \qquad (4.1)$$

3. To differentiate between the two samples on the basis of their mean vectors, the best discriminant function is formed as the combination of the m variables, X^1, and thus

$$y = x'B = b_1x_1 + b_2x_2 + \ldots\ldots + b_mx_m \qquad (4.2)$$

4. Choosing the b's to maximize the ratio of the weighted between groups variance to the pooled within-groups variance of y, the maximized variance ratio E is given by

$$E = \frac{\frac{N_1N_2}{N_1+N_2} B'dd'B}{B'SwB} \qquad (4.3)$$

where $\bar{X}_1$ and $\bar{X}_2$ are the individual group mean vectors and $d = (\bar{X}_1 - \bar{X}_2)$ and Sw is the pooled within-groups dispersion matrix.

5. The ratio E is stated to be homogenous of degree zero in B. Hence only the ratios of the coefficients are uniquely determined. The fact that the coefficients themselves are not unique provides several alternative methods of calculating the discriminant function.

The k Group Case. The function for the two group case is extended to the case where there are k groups or samples, and for $E=E_2$ and the set of (mx1)

$$\text{vectors} = V_1, V_2, \ldots . V_r \tag{4.4}$$

where $E_2 = \dfrac{|V\ OV|}{|V\ OV|}$

and where $V = [V_1, V_2, \ldots, V_r]$

mxr mx1 mx1 mx1

and Q is the matrix of the weighted among-groups deviation sums of squares of X, and W is the matrix of pooled within-groups deviation sums of squares.[1]

Cooley and Lohnes [69; 70] have also given a very simplified matrix view of these equations. Their introductory text is helpful in providing the first few steps towards proper understanding of the analytical procedures of discriminant analysis.

Discriminant Analysis of the Data in the Derived Policy Matrix

A discriminant analysis was performed on the derived policy matrix. Analysis was based on the organizational units of the ADA. The natural groups were considered as the existing organizational units within the ADA in 1972. These groups were listed by the serial number of the policies associated with them, by their divisional name and according to the number of policies as shown in Tables 4.3 and 4.4.

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[1] See Tintner [221, pp. 96-102] for a more simplified approach to these equations.

The Administration Division was omitted from the list of groups because the policies in this divisional unit were basic to all the policies in the rest of the groups. Also, the Administration unit was not discrete enough, thus violating one of the assumptions for this type of analysis.

TABLE 4.3

GROUPING OF POLICIES ACCORDING TO DIVISIONS IN THE ADA, FOR DISCRIMINANT ANALYSIS

Number of Groups	Group[a]	Group Name	No. of Policies
1	43-84	Extension Division	42
2	85-126	Family Farm Development	42
3	128-157	I-rigation Division	30
4	158-250	Plant Industry Division	93
5	251-280	Animal Industry Division	30
6	281-300	Veterinary Services Division	20
7	306-321	Commodity Section	16
8	322-334	Product Development Section	13
9	335-356	Market Development Section	22
10	357-359	Consumer Market Section	3
11	360-392	Market Intelligence Division	33

[a]The numbers under "group" refer to the serial number name of policies as given in Appendix B.

Hence, it was necessary only to discriminate between the rest of the divisional units of the ADA. These groups possessed the quality of discreteness according to the organizational set up of the Department of Agriculture.

Problems in Analysis

Because some of the variables in the groups as given in Table 4.6 correlated with each other, the groups so affected had to be deleted before the computer program (DERS, MULVIO) could be run.

Similar problems were encountered in the Commodity Section (306-321), and in the Market Development Section (335-356). In the Consumer Market Section (357-359) group size was the source of difficulty.[1] It was too small to enter into discriminant analysis. The problem of size is related to the dispersion of observations and also to the value of the group mean. Hence analysis was based on seven groups. These are all given in Table 4.3.

There was also a deletion of the whole of variable five, Income Distribution. The existence of linear relationships between this variable and the rest of the variables interfered with the running of the computer program. That this variable was the cause of difficulty in program application was detected through examination of the Irrigation Division, policy numbers 127-157. This group was subsequently deleted.

The computer program for the analysis did not have options for:

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[1] It is worth quoting Cooley and Lohnes' statements on the mapping of two groups into the discriminant space: " . . . this diagram depends upon the equality of the two group dispersions. If either the variances of X and Y or the X, Y covariance were different for the two groups, the contours for the two groups would not have the same shape and orientation, and the boundary would not be a straight line. The sizes of the two populations do not have to be the same, only the dispersions." Although the two authors were referring to the two group case, their discussion applied equally well to the many group case in this thesis [64, p. 245]. Also refer to Eisenbeis and Avery [86, p. 53].

TABLE 4.4

IMPACT ASSESSMENT OF POLICIES BY THE FIVE IDENTIFIED OBJECTIVES

(1)	(2)	(3)	(4)	(5)	(6) *	(1)	(2)	(3)	(4)	(5)	(6) *
43	20	8	18	6	3	100	8	1	40	5	1
44	10	14	16	10	5	101	14	1	27	9	3
45	9	12	30	3	1	102	10	1	40	3	1
46	16	12	14	10	3	103	18	8	12	12	5
47	7	15	18	12	3	104	10	3	35	6	1
48	13	2	30	10	1	105	7	1	40	6	1
49	8	4	30	12	1	106	4	3	40	7	1
50	5	4	30	15	1	107	8	1	40	5	1
51	14	10	16	8	5	108	3	1	40	10	1
52	20	8	18	6	3	109	4	1	35	14	1
53	10	5	30	57	3	110	4	1	35	14	1
54	15	20	8	10	2	111	4	1	35	14	1
55	10	12	16	14	3	112	4	1	35	14	1
56	11	14	18	10	2	113	15	12	16	7	5
57	20	10	13	9	3	114	3	37	6	8	1
58	28	14	7	5	1	115	9	8	30	6	2
59	20	25	5	4	1	116	3	2	40	9	1
60	40	1	9	4	1	117	40	1	8	5	1
61	40	6	5	3	1	118	40	1	8	5	1
62	10	16	11	15	3	119	40	1	8	5	1
63	4	30	8	12	1	120	1	2	10	2	40
64	10	14	20	8	3	121	14	3	18	19	1
65	14	12	4	18	7	122	5	13	16	20	1
66	7	18	10	19	1	123	1	4	5	15	30
67	8	20	4	22	1	124	15	4	19	4	11
68	9	15	10	20	1	125	15	4	19	4	11
69	16	2	16	18	3	126	15	4	19	4	11
70	15	18	6	12	4	128	8	4	32	10	1
79	14	12	20	8	1	129	8	1	35	10	1
72	14	12	20	8	1	130	8	1	35	10	1
73	20	10	18	6	1	131	8	1	35	10	1
74	20	10	18	6	1	132	8	1	35	10	1
75	20	14	13	7	1	133	8	1	35	10	1
76	20	14	13	7	1	134	8	1	35	10	1
77	2	10	16	12	15	135	8	1	35	10	1
78	12	6	22	10	5	136	8	1	35	10	1
79	10	5	20	18	2	137	8	1	35	10	1
80	10	5	20	18	2	138	8	1	35	10	1
81	10	5	20	18	2	139	8	1	35	10	1
82	10	5	20	18	2	140	8	1	35	10	1
83	10	5	20	18	2	141	3	2	40	9	1
84	10	5	20	18	2	142	3	2	40	9	1
85	24	4	10	12	5	143	3	2	40	9	1
86	23	6	15	9	2	144	5	1	30	18	1
87	24	4	10	12	5	145	5	1	30	18	1
88	23	6	15	9	2	146	5	1	40	8	1
89	14	5	20	13	3	147	5	1	40	8	1
90	13	12	10	17	3	148	5	1	40	8	1
91	10	5	30	8	2	149	5	1	40	8	1
92	10	5	30	8	2	150	5	1	40	8	1
93	10	5	30	8	2	151	5	1	40	8	1
94	12	3	16	10	14	152	5	1	40	8	1
95	30	1	17	4	3	153	5	1	40	8	1
96	13	3	8	12	19	154	5	1	40	8	1
97	30	1	8	13	3	155	5	1	40	8	1
98	35	2	3	12	3	156	5	1	40	8	1
99	35	1	8	6	5	157	5	1	40	8	1

* Legend: see end of table.

TABLE 4.4

IMPACT ASSESSMENT OF POLICIES BY THE FIVE IDENTIFIED OBJECTIVES

(1)	(2)	(3)	(4)	(5)	(6)*	(1)	(2)	(3)	(4)	(5)	(6)*
158	6	1	42	5	1	215	2	1	41	10	1
159	6	1	42	5	1	216	3	9	30	12	1
160	6	1	42	5	1	217	4	8	32	10	1
161	6	1	42	5	1	218	2	4	38	10	1
162	6	1	42	5	1	219	3	36	10	5	1
163	6	1	42	5	1	220	2	3	43	6	1
164	6	1	42	5	1	221	5	16	18	14	2
165	6	1	42	5	1	222	3	18	19	14	1
166	6	1	42	5	1	223	4	9	35	6	1
167	6	1	42	5	1	224	3	35	6	10	1
168	6	1	42	5	1	225	1	1	44	8	1
169	6	1	42	5	1	226	2	10	30	12	1
170	6	1	42	5	1	227	5	1	40	8	1
171	6	1	42	5	1	228	5	1	40	8	1
172	6	1	42	5	1	229	5	1	40	8	1
173	6	1	42	5	1	230	5	1	40	8	1
174	6	1	42	5	1	231	5	1	40	8	1
175	6	1	42	5	1	232	5	1	40	8	1
176	6	1	42	5	1	233	5	1	40	8	1
177	6	1	42	5	1	234	5	1	40	8	1
178	6	1	42	5	1	235	5	1	40	8	1
179	6	1	42	5	1	236	5	1	40	8	1
180	6	1	42	5	1	237	5	1	40	8	1
181	6	1	42	5	1	238	5	1	40	8	1
182	6	1	42	5	1	239	5	1	40	8	1
183	6	1	42	5	1	240	5	1	40	8	1
184	1	30	5	18	1	241	5	1	40	8	1
185	5	1	40	8	1	242	5	1	40	8	1
186	6	1	42	5	1	243	5	1	40	8	1
187	6	1	42	5	1	244	5	1	40	8	1
188	6	1	42	5	1	245	5	1	40	8	1
189	6	1	42	5	1	246	5	1	40	8	1
190	6	1	42	5	1	247	5	1	40	8	1
191	6	1	42	5	1	248	5	1	40	8	1
192	3	1	1	10	40	249	5	1	40	8	1
193	1	4	48	1	1	250	5	1	40	8	1
194	5	30	15	5	1	251	8	10	22	14	1
195	8	1	50	15	1	252	8	10	22	14	1
196	8	5	8	32	2	253	8	10	22	14	1
197	8	5	8	32	2	254	8	10	22	14	1
198	2	4	40	8	1	255	1	40	1	12	1
199	3	6	36	9	1	256	1	40	1	12	1
200	3	6	36	9	1	257	1	40	1	12	1
201	3	6	36	9	1	258	1	40	1	12	1
202	1	1	47	5	1	259	1	1	38	14	1
203	1	37	10	6	1	260	1	40	1	12	1
204	3	6	36	9	1	261	4	20	25	5	1
205	1	1	47	5	1	262	4	20	25	5	1
206	1	1	47	5	1	263	8	5	34	7	1
207	1	1	47	5	1	264	9	14	23	8	1
208	12	10	15	15	3	265	1	8	35	9	1
209	12	10	15	5	3	266	6	18	20	10	1
210	12	14	20	8	1	267	6	18	20	10	1
211	3	1	39	1	1	268	6	18	20	10	1
212	2	5	32	15	1	269	5	12	30	8	1
213	2	5	32	15	1	270	4	30	6	14	1
214	2	1	36	15	1	271	6	18	20	10	1

* (1) Serial Number of Policy
(2) Family farm development
(3) Market thrust
(4) Productivity increase
(5) Improvement in farm income
(6) Income distribution

TABLE 4.4

IMPACT ASSESSMENT OF POLICIES BY THE FIVE IDENTIFIED OBJECTIVES

(1)	(2)	(3)	(4)	(5)	(6) *	(1)	(2)	(3)	(4)	(5)	(6) *
272	6	12	24	12	1	334	3	33	10	3	1
273	6	12	24	12	1	335	1	40	2	10	1
274	6	12	24	12	1	336	1	40	2	10	1
275	2	12	30	10	1	337	1	40	2	10	1
276	5	11	20	18	1	338	1	40	2	10	1
277	6	12	24	12	1	339	1	40	2	10	1
278	3	30	6	13	1	340	1	40	2	10	1
279	3	30	6	13	1	341	1	40	2	10	1
280	5	8	30	12	1	342	1	40	2	10	1
281	1	20	30	3	1	343	1	40	2	10	1
282	1	20	30	3	1	344	1	40	2	10	1
283	1	20	30	3	1	345	1	40	2	10	1
284	1	20	30	3	1	346	1	40	2	10	1
285	1	20	30	3	1	347	1	40	2	10	1
286	1	20	30	3	1	348	1	40	2	10	1
287	1	20	30	3	1	349	1	40	2	10	1
288	1	12	27	14	1	350	1	40	2	10	1
289	1	12	27	14	1	351	1	40	2	10	1
290	1	12	27	14	1	352	1	40	2	10	1
291	1	11	30	12	1	353	1	40	2	10	1
292	1	11	30	12	1	354	1	40	2	10	1
293	1	11	30	12	1	355	1	40	2	10	1
294	2	4	40	8	1	356	1	40	2	10	1
295	2	4	40	8	1	360	2	30	13	9	1
296	2	4	40	8	1	361	4	35	5	10	1
297	2	4	40	8	1	362	2	30	13	9	1
298	2	4	40	8	1	363	2	37	5	10	1
299	2	30	14	8	1	364	3	1	31	35	15
300	2	30	14	8	1	365	3	2	33	16	1
306	5	35	4	10	1	366	3	2	33	16	1
307	5	35	4	10	1	367	4	30	8	12	1
308	5	35	4	10	1	368	4	12	30	8	1
309	5	35	4	10	1	369	4	12	30	8	1
310	5	35	4	10	1	370	4	12	30	8	1
311	5	35	4	10	1	371	4	30	8	12	1
312	5	35	4	10	1	372	4	30	8	12	1
313	5	35	4	10	1	373	4	30	8	12	1
314	5	35	4	10	1	374	4	30	8	12	1
315	5	35	4	10	1	375	4	30	8	12	1
316	5	35	4	10	1	376	3	15	32	4	1
317	1	35	4	14	1	377	8	16	20	10	1
318	1	35	4	14	1	378	8	16	20	10	1
319	5	35	4	10	1	379	4	20	15	10	6
320	5	35	4	10	1	380	3	21	10	20	1
321	5	35	4	10	1	381	4	5	15	30	1
322	5	35	4	10	1	382	2	10	25	12	5
323	5	35	4	10	1	383	1	4	34	15	1
324	5	35	4	10	1	384	1	4	34	15	1
325	5	35	4	10	1	385	1	12	16	18	8
326	5	10	30	8	2	386	1	35	6	12	1
327	4	1	42	7	1	387	2	1	41	10	1
328	2	34	12	6	1	388	2	1	41	10	1
329	3	33	10	8	1	387	2	1	41	10	1
330	3	33	10	8	1	390	2	1	41	10	1
331	3	33	10	8	1	391	4	22	23	5	1
332	3	33	10	8	1	392	4	22	23	5	1
333	3	33	10	8	1						

1. The mappings of the groups in the discriminant space
2. Obtaining predicted groups and listing by the serial number the names of policies belonging to the groups as given on Table 4.8
3. Predicted groups by one and four eigenvectors, respectively, and the listing of members in each group according to the serial number code of these policies.

Results of Discriminant Analysis

Results of the analysis are as presented in Tables 4.5, 4.6, 4.7 and 4.8. Four discriminant functions and seven groups or ADA divisions were obtained from the analysis. The seven groups are:

1. Extension Division,
2. Family Farm Development,
3. Plant Industry Division,
4. Animal Industry Division,
5. Veterinary Services Division,
6. Product Development Section,
7. Market Intelligence Division.

Values of the means for the variables and groups as given in Table 4.5 were used to obtain the values for the discriminant functions, and for finding the difference in dispersions among the groups. The standard deviation was used in a Bartlett's test of homogeneity of means. This test was necessary since in the absence of homogeneity, only a quadratic calculation could be used for the discriminant analysis.

The four discriminant functions which follow are arranged in

TABLE 4.5

MEANS AND STANDARD DEVIATIONS OF THE VARIABLES FOR THE STRUCTURAL GROUP DIVISIONS IN THE ALBERTA DEPARTMENT OF AGRICULTURE, 1972

Variable	Extension Division	Family Farm Development	Plant Industry	Animal Industry	Veterinary Services	Product Development Section	Market Intelligence
Family Farm Development	0.141[a] (0.793)[b]	0.148 (0.114)	0.483 (0.220)	0.463 (0.261)	0.135 (0.489)	0.377 (0.109)	0.324 (0.164)
Market Thrust	0.109 (0.628)	0.436 (0.604)	0.428 (0.784)	0.187 (0.118)	0.145 (0.827)	0.294 (0.108)	0.169 (0.123)
Productivity Increase	0.162 (0.732)	0.216 (0.125)	0.363 (0.108)	0.192 (0.111)	0.305 (0.738)	0.123 (0.112)	0.205 (0.126)
Improvement in Farm Income	0.125 (0.879)	0.919 (0.445)	0.789 (0.476)	0.113 (0.283)	0.775 (0.417)	0.838 (0.126)	0.123 (0.628)

[a]The calculated values of the group means were used to find the standardized group means on the four discriminant functions given in Table 4.8. The calculated standardized group means are as presented in Table 4.3.

[b]The standard deviation used for Bartlett's test of Homogeneity of Dispersion.

TABLE 4.6

STATISTICS FOR THE CALCULATED EIGENVECTORS
IN DISCRIMINANT ANALYSIS GIVING THE SIGNIFICANCE
OF THE ROOTS (EIGENVALUES)

Rank and Root Number	Value of Root (Eigenvalue)	Degrees of Freedom	Value of Chi Square Statistic	Probability (Significance Level Percent)	Percent of Total Variance Accounted for by Root
1	0.9893	24	337.2285	0.000000	56.184
2	0.6835	15	158,0659	0.000000 (0%)	38.830
3	0.0561	8	22.3459	0.004314 (0.43%)	3.188
4	0.0317	3	8.1172	0.043651 (0.37%	1.798

Note: Rao's Test of Significance of Roots. By Rao's test, since the calculated values of the four chi squares are significantly greater than their corresponding values of degrees of freedom, the four variables used in the analysis give the dimensionality of the data as 4.

order of their relative discriminating power:

$$Z_1 = 0.643X_1 - 0.616X_2 - 0.4563X_3 + 0.186X_4 \quad (4.5)$$

$$Z_2 = -0.319X_1 - 0.764X_2 + 0.146X_3 - 0.542X_4 \quad (4.6)$$

$$Z_3 = -.319X_1 + 0.326Z_2 + 0.204X_3 + 0.978X_4 \quad (4.7)$$

$$Z_4 = 0.618X_1 + 0.505X_2 + 0.500X_3 + 0.336X_4 \quad (4.8)$$

The size of the calculated values of the roots (eigenvalues) as given in Table 4.6 rank the discriminating power of these functions. Thus, from Table 4.6 the best discriminant function is the one with root number 1 and an eigenvalue of 0.9893. Values of the discriminant equations for each of the calculated seven group means. They are as given in Table 4.7.

Relative Contributions of Individual Variables to the Discriminatory Power of a Function

The method used in calculating the relative weights of the individual variables in the discriminant function provide an approximate solution. The normalized weight of a variable in each function was multiplied by the square root of the corresponding diagonal elements of the pooled-within groups deviation sums of squares matrix (Table 4.8.). In the computer output it is simply labelled as the total dispersion matrix. The sign of the calculated values if positive indicates the direction descriptive of the group having the higher mean score on a particular discriminant function. If negative, the sign gives the direction descriptive of the group with lower mean score on the discriminant function.

In the first discriminant function, Family Farm Development

TABLE 4.7

RELATIVE CONTRIBUTION OF INDIVIDUAL VARIABLES TO THE DISCRIMINATORY POWER OF A FUNCTION

Standardized Group Mean	Values from the Diagonal of Pooled-Within Group Dispersion Matrix		Calculated Weighted value of Discriminant Function	Family Farm X_1	Market Thrust X_2	Productivity Increase X_3	Improvement in Farm Income X_4
z_1	$\overline{0.324}$	=	0.569	0.366	-0.351	-0.259	0.106
z_2	$\overline{0.765}$	=	0.875	-0.279	-0.669	0.128	-0.474
z_3	$\overline{0.115}$	=	0.339	0.108	0.111	0.069	0.332
z_4	$\overline{0.297}$	=	0.545	0.337	0.275	0.273	0.183

as an objective carried the largest regressive weight of 0.366. Improvement in Farm Income was second in position and had a weight of 0.106. Productivity Increase was weighted -0.259 in the third place, and Market Thrust was fourth with a regression weight of -0.351.

In the second discriminant function, Productivity Increase as a variable had the highest positive weight and was scaled 0.128. Family Farm variable was next in rank and had a weight of -0.279. Improvement in Farm Income occupied the third place with a weight of -0.474, Table 4.7, while Market Thrust was fourth in importance with a weight of -0.669 (Table 4.7).

In the third discriminant function, Improvement in Farm Income had a high positive weight of 0.332. Market Thrust was second and was scaled 0.111. Occupying the third place was Family Farm Development, weighted 0.108. Productivity Increase was fourth in rank and had a scaled weight of 0.069. In the fourth discriminant function, Family Farm Development variable had the greatest discriminatory weight of 0.337 in Table 4.7. Market Thrust variable was second with a weight of 0.275. Productivity Increase was third and was weighted 0.273. In the fourth and the last position was Improvement in Farm Income, weighted 0.183.

Discriminating Among the Seven Divisions in the ADA

The calculated values of the four discriminant functions (given in Table 4.8) were used to identify the relative policy thrusts of the seven divisional units of the ADA with respect to the four objectives.

TABLE 4.8

VALUES OF THE DISCRIMINANT FUNCTIONS
(VECTOR OF STANDARDIZED GROUP MEANS)

Name of Division	Value of the Standardized Group Means of the Discriminant Functions			
	Z_1	Z_2	Z_3	Z_4
1. Extension Division	-0.027	0.172	0.236	0.265
2. Family Farm Development	1.103	0.845	1.130	0.727
3. Plant Industry	-0.603	-0.856	1.140	0.961
4. Animal Industry	0.116	-0.324	0.359	0.514
5. Veterinary Services	0.003	-0.529	0.910	0.569
6. Product Development	0.160	-0.781	1.061	0.725
7. Market Intelligence	0.034	-0.269	0.320	0.429

Using the first discriminant function, Z_1, Family Farm Development Division was most positively identified. The group discriminant mean was 1.103. Product Development was the next division identified with a group mean of 0.160. Animal Industry Division was third and had a group mean of 0.116. Market Intelligence was fourth and had a standardized group mean of 0.034. In the fifth place was Veterinary Services with a standardized group mean of 0.003. Extension Division was not positively identified on this discriminant function. Its group mean was -0.027. Plant industry division was similarly not positively identified and was seventh, next to the Extension Division. Its weighted group mean was -0.603.

In the second discriminant function, Z_2, (Table 4.8), Family Farm Division was most positively identified. It had a group mean of 0.845. Extension division was the next best identified. The group mean was 0.172. Market Intelligence was not positively identified.

Its group mean was -0.269 and occupied the third place. Fourth in rank was Animal Industry. The calculated group mean was -0.324. Veterinary Services was fifth with a group mean of -0.529. Sixth in discrimination was Product Development. Discrimination was negative and weighted value of the group mean was -0.781. The seventh and last to be discriminated on this function was Plant Industry Division. Discrimination was negative and the group mean was -0.856. Similar interpretations may be made using discriminant functions, Z_3 and Z_4. The significance tests of equality of group dispersions, and means are given in Appendix A.

Interpretation of Results

The calculated discriminant functions provide four ways by which policies of the Alberta Department of Agriculture in 1972 could be grouped into the seven divisional units under comparison (Table 4.8). These four functions are also useful for classifying new policies under any of the seven identified ADA divisions. Grouping or classification with these functions help to bring out inconsistency in policy. Policies which do not belong to the right divisional unit are highlighted by the discriminant function.

If the rankings of the four objectives and the seven ADA Divisions on the four discriminant functions are considered together, results of the discriminant analysis can be interpreted that based on the first function Family Farm Development was most positively identified with a family farm concern and an income improvement objective. Product Development, Animal Industry, Market Intelligence and Veterinary Services Divisions were identified with the explicit

objective of improvement in farm income but with implicit objectives of market thrust and productivity increase. In the Family Farm Development Sector these four divisions had explicit policy direction. Extension and Plant Industry Divisions also pursued a combination of these four objectives (Table 4.7). However, the locations of these two latter divisions on the discriminant function made it difficult to relate them to any of the four objectives. Similar interpretations may be used to group the seven identified ADA divisions under the four objective classes, using the rest of the three discriminant functions and the values in Tables 4.7 and 4.8.

In this analysis the classification rule provided should be useful for reclassifying the identified policies of the seven ADA divisions and also for classifying a new policy element into any of these seven groups.

Linear Classification Rule in Test Space

1. Using the four discriminant functions, equations (4.5) to (4.8):

$$\text{Let } Y_1 = 0.643X_1 - 0.616X_2 - 0.146X_3 - 0.542X_4 \qquad (4.9)$$

$$Y_2 = -0.319X_1 - 0.764X_2 + 0.146X_3 - 0.542X_4 \qquad (4.10)$$

$$Y_3 = 0.319X_1 + 0.326X_2 + 0.204X_3 + 0.978X_4 \qquad (4.11)$$

$$\text{and } Y_4 = 0.618X_1 + 0.505X_2 + 0.500X_3 + 0.336X_4 \qquad (4.12)$$

2. For each new policy element, k, to be classified, calculate the values, Y_1k, Y_2k, Y_3k, Y_4k, based on the scores of the policy element on the four objective variables, X_1, X_2, X_3, X_4 (Table 4.4).

3. Let the standardized group mean scores given in Table 4.8 be

represented and arranged as in Table 4.9.

TABLE 4.9

ARRANGING AND LABELLING THE STANDARDIZED GROUP MEANS OF THE IDENTIFIED SEVEN DIVISIONAL UNITS OF ALBERTA DEPARTMENT OF AGRICULTURE FOR THE LINEAR CLASSIFICATION RULE

Divisional Unit	Symbol for the Standardized Group Mean			
1. Extension Division	Z_{11}	Z_{12}	Z_{12}	Z_{14}
2. Family Farm Development	Z_{21}	Z_{22}	Z_{23}	Z_{24}
3. Plant Industry	Z_{31}	Z_{32}	Z_{33}	Z_{34}
4. Animal Industry	Z_{41}	Z_{42}	Z_{43}	Z_{44}
5. Veterinary Services	Z_{51}	Z_{52}	Z_{53}	Z_{54}
6. Product Development	Z_{61}	Z_{62}	Z_{63}	Z_{64}
7. Market Intelligence	Z_{71}	Z_{72}	Z_{73}	Z_{74}

4. The distance of each policy element from each of the seven groups or divisions is given by:

$$D_{jk} = \sqrt{(Y_{ik}-Z_{i1})^2 + (Y_{2k}-Z_{i2})^2 + (Y_{3k}-Z_{i3})^2 + (Y_{4k}-Z_{i4})^2}$$

where D_{jk} is the distance of policy element k from group j,

$i = 1, 2, 3, 4, 5, 6, 7$, and

$j = 1, 2, 3, 4, 5, 6, 7$.

5. To classify the new policy element k, given that the values of Z (Table 4.9) are known, use the principle that the policy element should be classified under the jth policy group to which it falls closest in the discriminant space. That is the distance, D_{jk}, from the new policy element to the standardized jth group mean must be the smallest of the seven group means. The values of D_{jk} can vary

from zero to any positive number. A zero value implies perfect classification of the new policy element k under the jth group of policy or ADA division.

Alternative Methods of Classifying Policies

There are two other alternative methods of designing classification rules. One is based on a priori probability distribution. The other is derived from the possibility of reducing the dimensionality of the original test space. The virtue in this latter approach is in the simplicity and ease of classification. However, it is observed that as the dimensions of the original test space are reduced, error and cost of misclassification are increased [86, 182].

Comparison of Divisional Expenditures with Results of Discriminant Analysis

In the discriminant analysis Irrigation Division had to be deleted before analysis could proceed. This deletion might mean that either irrigation functions were subsumed in the activities of the other ADA divisions or that not much about these functions was contained in the Annual Report [10] to allow a fair judgment on the relative importance of the Irrigation Division in 1972. In the expenditure analysis (Table 4.1), Irrigation Division was sixth in rank. In terms of the rate of growth or emphasis in percentage terms, the division was second in rank to Extension Division. Compared with the Veterinary Services and Marketing Divisions in Table 4.1, Irrigation Division was of about the same rank. On the first discriminant

function the weighted group mean for Veterinary Services Division was 0.034. This placed the division in fifth position. It was fifth again in the 1971-72 estimates and in the 1972-73 estimates. Irrigation Division is given in Table 4.1 to be in the sixth place for the two consecutive fiscal periods in terms of the absolute size of dollar estimates. The percentage rate of expenditure growth of 41.0% which placed the division in the second place, was quite significant. Listed in order of the size of their discriminant scores on the first function as given in Table 4.10, the relative order of importance of the other six divisions of the ADA in 1972 was Product Development, Animal Industry, Market Intelligence, Veterinary Services, Extension Division and Plant Industry Division. Based on the first discriminant function, the order of the relative importance of the objectives pursued by the ADA in 1972 was Family Farm, Improvement in Farm Income, Productivity Increase and Market Thrust.

Differences in the ranking of the ADA divisions according to percentage calculations the size of absolute dollar expenditures and according to the discriminant functions were expected. In the discriminant analysis, subjective assessments of policy impacts were used to estimate the relative policy thrusts of the divisions. In Table 4.1 calculations were based on given estimated dollar expenditures for these divisions and for the periods listed. In Alberta Agriculture in the 70's [23], Family Farm development was given the first priority in agricultural policy. Marketing was second in importance. Results of discriminant analysis did not agree with these rankings. It might, therefore, be inferred that there was a dis-

crepancy between the statement of policy and its actual implementation. However, it was recognized that these divisions might not have been completely independent of each other. Thus the programs of one division might have contributed significantly to the progress in the other divisions. Discriminant analysis is based on complete separation of groups. If such interdependence existed, then it would be necessary to be careful in evaluating the functions of these individual divisions and the degree of overlap in activities in 1972.

CHAPTER V

SUMMARY AND CONCLUSIONS

A policy matrix model (Appendix C) is a useful tool for systematically listing, categorizing and describing agricultural policies according to their various attributes. The construction of such a matrix demands an initial identification, disaggregation and subsequent coding of the units of policy statements. These statements must be in their simplest form, embodying the means--target view of the theory of economic policy. The simplest unit of these statements for such a policy matrix must convey the idea of a single objective.

The need for analysis of interactions or structural consistency in policy demands a comprehensive identification, coding and listing of attributes of policies. The selected attributes must offer an opportunity for measurement and comparison for the purpose of policy impact assessment. Classification of attributes into locus of policy (Alberta Government; Alberta Department of Agriculture; etc.), functional type (regulatory; advisory; distributive; resource access and terms; promotional; administrative), agricultural aspect affected (general or more than one; production; marketing; infrastructure; etc.), producing sector affected (general or more than one; crops; animals and animal products; etc.), and spatial effect (entire province; part of province) as in Table 3.2 is necessary for establishing

the nature and magnitude of policy achievement in terms of its stated or implied objectives. The size of the matrix is therefore a function of the range and depth of the objectives of a policy study. The matrix can be as large as is manageable and practical, and as detailed in information as possible.

The matrix can be analysed using various methods according to the objectives of the study. Calculations can range from simple arithmetic procedures to highly refined and complex statistical methods. It can also be used simply to make descriptive but potent statements about policies and their attributes. Such description can embrace things like knowing how sharp is the line of separation of activities between the agents administering policy and the hierarchy of relationships. The mathematical or statistical method of analysis to be applied is a factor of the researcher's interest and of the limits of the model. Cross-tabulation analysis is useful in investigating the properties of interdependence and independence among policies as described by their attributes.

Data for the expenditure estimates and the relative changes between the two successive fiscal periods, 1972-73 and 1971-72, show that if absolute dollar amounts were considered in the period 1972-73, administrative divisions ranked in this order: Extension, Family Farm, Animal Industry, Plant Industry, Marketing, Irrigation and Veterinary Services. In terms of percentage growth rate in expenditures, Marketing was first, followed by Irrigation, and then Extension, Family Farm Development, Plant Industry, Animal Industry, and Veterinary Services.

A derived matrix was prepared on the basis of five objectives

which were identified as the most significant in Alberta agricultural policy in 1972. The objectives were family farm development, market thrust, improvement in farm income, productivity increase and income distribution. Five weights were subjectively assigned to each of the 528 Alberta agricultural policies (listed in Appendix C). The weights were assigned according to the relative importance of a policy to each of the five objectives. To reflect the assumption that each of the 528 policies was as important as any other, the sum of the weights of a policy on the five objectives was 55. The five objectives can be ranked by summing the weights of all 528 policies on each objective.

In the discriminant analysis only seven of the eleven identified ADA divisions (that is, excluding the administration division) could be included. These seven divisions were ranked in the analysis in order of the explicitness and implicitness of their policy statements and the extent to which these statements could be measured by their impacts on each of the five listed objectives. The ranking was Family Farm Division, Product Development Division, Animal Industry Division, Market Intelligence, Veterinary Services, Extension Division and Plant Industry (Table 4.8). For applied analysis, however, ranking of policy impacts on each of the five objectives should be substituted ay panel ranking, systematically combined by scaling.

On the first discriminant function, the five objectives were ranked as follows: Family Farm Development, Improvement in Farm Income, Productivity Increase and Market Thrust (Table 4.7). The

Progressive Conservative policy statement of 1972 [18] gives Family Farm Development the highest priority in their agricultural policy proposal. Marketing was ranked second. There was no definite ranking of the other three policy objectives or goals listed in this study.

Results of discriminant analysis indicated that on the first discriminant function, both Family Farm Development and Improvement in Farm Income appeared to be explicit objectives in the Family Farm Division while Market Thrust and Productivity Increase were implicit policy goals. Improvement in Farm Income appeared to be a clearly stated objective in the Animal Industry, Veterinary Services, Product Development and Market Intelligence Divisions. However, Productivity Increase and Market Thrust appeared to be implicit policy goals in the above four divisions. While Extension and Plant Industry Divisions apparently included a combination of these objectives, their identification positions on the discriminant function made it impossible to relate them to any one of these five objective classes (Tables 4.7 and 4.8).

Implications and Conclusions

Clearly, the purpose of the Irrigation Division is to promote productivity increase and better farm income. Its deletion from the discriminant analysis could therefore mean either of two things: 1. that the functions and policy statements of the Division were not adequately given in the sources used, and 2. that the selected five objectives were not sufficient to bring out the impact of irrigation policy in Alberta agriculture. Similarly, the removal of the Income Distribution objective from the analysis could indicate

that either the objective was submerged in the other three objectives, and hence best carried out implicitly, or that there was not sufficient data to reflect its importance in Alberta agricultural policy in 1972.

Results of analysis reflect the author's subjective ranking of policy statements in Alberta agriculture in 1972. Ranking was based on written policy statements, particularly those in the Annual Report [11] and the Income Account and Expenditure Estimate books [106]. Ranking could not be done using a uniform method. Nevertheless, the principle of analysis can be applied provided: 1. more policy variables or attributes are included in analysis, 2. policies are defined by uniform standards, based on knowledge of operation of the ADA in addition to the explicitly stated policies, and 3. weighting of policies is done by a panel of either policy clientele or administration or both.

However, given the importance of agriculture in the provincial economy and given the existence of agricultural resources for ample progress in the industry, it is important that the current agricultural policy and its implementation in the Province be reexamined for efficiency of operation. The current stated priority goal of the Department is marketing. But with the present structure of the Alberta Department of Agriculture not varying much from that of 1972, and in the light of the results of this thesis, it may be hypothesized that there is a lag in the perception of the objectives of Alberta agriculture and the means to bring about goal achievement in the agricultural sector. There may, therefore, be a need to reorganize the Department in accordance with the aims of the government. Furthermore,

the Acts which embody the agricultural policy as described in this thesis (Appendices E to G) may need major review to provide the necessary direction for optimal implementation of policy objectives for growth and improvement in Alberta agriculture.

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APPENDIX A

Significance Tests of Equality of Group Dispersions and Means

1. Bartlett's homogeneity of dispersion test:

Determinant of W = 0.173586

For test of H_1, M = 0.103275

A_1 = 0.061535

A_2 = 0.006587

$(A_1 - A_2)^2$ = 0.280041

B = 0.641193

DF_1 = 60.0

DF_2 = 22139.6

F-Ratio = 0.161066

Probability = 0.0

$H_1 = U_1 = U_2 = U_3 \ldots U_7 = \Delta$

where U_i = group means (i = 1,...7; that is, the number of divisional units), Δ = common dispersion.

The table value of F-ratio for DF_1 (numerator) = 60.0 and DF_2 (denominator) = 22139.6 (or ∞) at 5 percent level of significance = 1.3.

The calculated F-ratio = 0.161066. Hence, the calculated F-ratio is not significant at the 5 percent level, and the dispersions in the seven populations or groups of policies are equal.

2. Wilk's Lambda -- a test for equality of population means (centroids), H_2.

DF_1 = 24; DF_2 = 919;

F-ratio = 0.[illegible]199; Probability = 0.0; Lambda = 0.274022.

The table value of F-ratio for the same degrees of freedon and

at 5 percent significance level of test = 1.56. Hence the calculated F-ratio is not significant and the difference in group means are not significantly different from zero.

These tests are based on Cooley and Lohnes, Multivariate Data Analysis [69, pp. 223-230 and Table A.1, p. 342].

3. Maximum Latent Root Approach--significance test for equality of group means.

S = 4 (number of variables); m = 0.5; n = 130.5; Heck = 0.497302; θ = 0.568.

Since the calculated value of Heck is 0.497302 and it is below the table value 0.568, there is no significant difference between the group means.

The equality in group dispersions as shown by the respective significance tests means that a linear transformation can be used to transform the four dimensions into reduced dimensions.

No. of discriminant functions = 4.

Discriminant functions:

$Z_1 = 0.643X_1 - 0.616X_2 - 0.456X_3 + 0.186X_4$

(Eigenvalue = 0.9893)

$Z_2 = 0.319X_1 - 0.764X_2 + 0.146X_3 - 0.542X_4$

(Eigenvalue = 0.6837)

$Z_3 = 0.319X_1 + 0.326X_2 + 0.204X_3 + 0.978X_4$

(Eigenvalue = 0.0561)

$Z_4 = 0.618X_1 + 0.505X_2 + 0.500X_3 + 0.336X_4$

(Eigenvalue = 0.0317)

Best discriminant function as adjudged by the size of the eigenvalue is:

$$Z_1 = 0.643X_1 - 0.616X_2 - 0.456X_3 + 0.186X_4$$

(Eigenvalue = 0.9893)[1]

where: X_1 = family farm development; X_2 = market thrust;

X_3 = productivity increase; X_4 = improvement in farm income.

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[1]See Table 4.5 for the corresponding percent of total variance accounted for by eigenvalues and hence the relative importance of these functions.

APPENDIX B

A PRELIMINARY LIST OF AGRICULTURAL POLICIES OF THE GOVERNMENT OF THE PROVINCE OF ALBERTA

Policies have been identified on the basis of statements in the 1972 Annual Reports and the 1972-73 Income Account Expenditure Estimates. They have generally been arranged in the sequence in which they occur in the report and are indexed by the organization responsible for their execution.

Code[1]	Organization and Policy
	ALBERTA DEPARTMENT OF AGRICULTURE (SN 1-392)
1 A0000	A. Minister's Office
2 A0000A	To be responsible for the overall growth and development of the agricultural industry
3 A0000B	To develop policies and programs to support the governmental thrust in marketing
4 A0000C	Operation of the Office of the Minister of Agriculture
5 A0000D	Adjustment of the Department's structure to the changing environment facing agriculture
6 A0000E	Family farm development
7 A0000F	Production expansion [10, p. 4]
8 B000	B. Deputy Minister
9 B0100	I. General Administration
10 B0100A	A. Operate the Office of Deputy Minister
11 B0100B	B. Operate the Office of Director of Administration
12 B0100C	The Personnel Branch
13 B0100D	Accountants' Branch
14 B0101	1. Information Branch [10, p. 7], Communications
15 B0101A	Press publications

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[1] Serial Number of Identification Code (See Table 3.1).

Code	Organization and Policy
16 B0101B	Radio Programming
17 B0101C	Film production
18 B0101D	Library services
19 B0101E	Publications
20 B0101F	Duplications
21 B0101G	Art and graphics services
22 B0102	2. Personnel Office [11, p. 9]
23 B0102A	Recruitment and selection
24 B0102B	Employee relations
25 B0102C	Staff development
26 B0103	3. Systems Design and Data Analysis Branch [10, p. 10]
27 B0103A	To provide computer service
28 B0103B	To provide for the systems and programming requirements of the Department of Agriculture and related boards and agencies
29 B0104	4. Agricultural Research
30 B0104A	Funding agricultural research (Alberta Agricultural Research Trust Act)
31 B0105	5. Miscellaneous Grants to support:
32 B0105A	Management
33 B0105B	ROP-Beef
34 B0105C	Dairy herd improvement
35 B0105D	Cattle brand inspection
36 B0105E	Veterinary information
37 B0105F	Retrieval and general purpose computer utilization
38 B0200	II. Policy Formulation, Liaison and Planning Secretariat

Code	Organization and Policy
39 B0200A	To define agricultural policy alternatives to the Deputy Minister [11, p. 12]
40 B0200B	Coordinate activities of intra- and intergovernmental, agri-business, commodity groups, farm organizations and socio-economic sources
41 B0200C	To synthesize and evaluate agricultural policy and program
42 C00	C. Assistant Deputy Minister: Development
43 C0300	III. Extension Division [11, p. 17]
44 C0301	L. Agricultural Education and Rural Extension
45 C0301A	Rural extension education
46 C0302	2. Special programs
47 C0302A	Agricultural week
48 C0302B	Rural resources
49 C0302C	Farm management training
50 C0302D	Evaluation
51 C0303	3. Administration
52 C0303A	Operate the Office of the Director of the Extension Division
53 C0303B	A staff development program
54 C0303C	A home economics laboratory
55 C0303D	A programs secretariat
56 C0303E	A professional services secretariat
57 C0303F	A leadership specialist
58 C0304	4. Home Economics Specialists and Laboratory [11, p. 21]
59 C0304A	Food, nutrition, and marketing
60 C0304B	Clothing and textiles
61 C0304C	Home management, consumer affairs

Code	Organization and Policy
62 C0305	5. Programs Secretariat [11, p. 21]
63 C0305A	Seminars on marketing
64 C0305B	District agriculturist training
65 C0305C	Committee chairing
66 C0305D	Task force assistance
67 C0305E	Facilitate policy development
68 C0305F	Liaison
69 C0305G	Agricultural recreational development
70 C0305H	Implement agricultural policy
71 C0306	6. Professional Services Secretariat
72 C0306A	Staff development
73 C0307	7. Leadership development office
74 C0307A	Leadership development
75 C0308	8. Agricultural law specialist's office
76 C0308A	Agricultural law specialist's services
77 C0309	9. Regions [11, p. 19]
78 C0309A	Decentralization of provincial extension activities among the seven regions
79 C0309B	Lethbridge Region--Run regional extension programs to inform rural communities and individuals of marketing opportunities and production developments
80 C0309C	Calgary Region--Operate regional extension program to inform rural communities and individuals of marketing opportunities and production developments
81 C0309D	Red Deer Region--Operate regional extension programs to inform rural communities and individuals of marketing opportunities and production developments

Code	Organization and Policy
82 C0309E	Vermilion Region--Operate regional extension programs to inform rural communities and individuals of marketing opportunities and production developments
83 C0309F	Edmonton Region--Operate regional extension programs to inform rural communities and individuals of marketing opportunities and production developments
84 C0309G	Fairview Region--Operate regional extension programs to inform rural communities and individuals of marketing opportunities and production developments
85 C0400	IV. Family Farm Division [11, p. 23]
86 C0401	1. Family Farm Development
87 C0401A	Administration--Operate the Office of the Director of the Family Farm Division
88 C0401B	Growth and development of the family farm
89 C0401C	Alberta Agricultural Development Corporation
90 C0402	2. Cooperative Activities and Credit Union Branch
91 C0402A	Supervise co-ops
92 C0402B	Compile co-op statistics
93 C0402C	Audit of records
94 C0402D	Administer loan guarantees for co-ops
95 C0402E	Grant and collect loans under the Rural Electrification Revolving Fund
96 C0402F	Examine and audit credit unions (Credit Union Act)
97 C0403	3. Engineering and Home Design Branch [11, p. 31]--Engineering services to increase efficiency and develop:
98 C0403A	The farmstead
99 C0403B	Water and sewage systems and the farm home
100 C0403C	Administer the Farm Implement Act
101 C0404	4. Land Management Branch

Code	Organization and Policy
102 C0404A	Irrigation land development
103 C0405	5. Municipal Relations Branch
104 C0405A	Coordinate and liaise between the Agricultural Service Boards and the Department of Agriculture
105 C0405B	Ensure manpower needs of farms
106 C0405C	Administer Agricultural Service Board
107 C0405D	Soil conservation
108 C0405E	Weed control
109 C0405F	Field crops improvement
110 C0405G	Livestock improvement
111 C0405H	Crop diseases and pest control
112 C0405I	Livestock diseases and pest control
113 C0405J	Administer Agricultural Societies Act
114 C0405K	Support displays and fairs
115 C0405L	Support capital construction
116 C0405M	Agricultural Manpower administration including Federal-Provincial Agricultural Manpower Agreement and assistance for movement of seasonal workers and housing
117 C0406	6. Surface Right's Board
118 C0406A	Administer the Surface Rights Act
119 C0406B	Administer Part 3 of the Expropriation Procedures Act (Expropriation by Companies)
120 C0407	7. Lesser Slave Lake Projects
121 C0407A	Home Economics Program
122 C0407B	Home Visitors Program
123 C0407C	Stimulate small business development
124 C0408	Alberta Agricultural Development Corporation

Code	Organization and Policy
125 C0408A	Loans to developing farmers
126 C0408B	Guaranteed loan program for farmers and agricultural businesses
127 D00	D. Assistant Deputy Minister: Production
128 D0500	V. Irrigation Division [11, p. 63]
129 D0500A	Professional and technical assistance and expertise to irrigation districts and to farmers
130 D0500B	Support economic viability of irrigated farm units by better conservation and management of the land, water, labour, and capital resources
131 D0500C	Recommend policies
132 D0500D	Implement programs related to irrigation system rehabilitation
133 D0500E	Plan for the development and/or extension of existing and potential irrigation projects [11, p. 65)
134 D0501	1. Irrigation: Administration
135 D0501A	Maintain the Office of the Director of the Irrigation Division
136 D0501B	The administration expenses of the Division
137 D0502	2. Irrigation Secretariat
138 D0502A	Effect Irrigation policy
139 D0502B	Coordinate the activities related to irrigation rehabilitation and related water administration involving the Department of Environment and the Department of Agriculture
140 D0502C	Administer the Irrigation Act
141 D0503	3. Conservation and Development Branch [11, p. 66]
142 D0503A	Provide professional and technical service to farmers and agencies in the development, management, and use of water in irrigation farming
143 D0503B	Determine and develop the maximum lands suitable for irrigation

Code	Organization and Policy
144 D0504	4. Project Planning Branch [11, p. 68]
145 D0504A	Coordinate and supervise rehabilitation of irrigation works
146 D0505	5. Technical Resources Branch
147 D0505A	Define problems in irrigated agriculture with respect to methods, equipment, structures, instrumentation and soil-water relationships
148 D0505B	Seek solutions, provide professional and technical services in the areas of:
149 D0505C	Canal location
150 D0505D	Soil classification
151 D0505E	Land reclamation from seepage damage
152 D0505F	Right of way appraisal
153 D0505G	Economic analysis on the feasibility of irrigation projects, individual farms and irrigation districts
154 D0505H	Drainage, seepage, investigation
155 D0505I	Soil analysis for irrigation purposes and capital works projects
156 D0506	6. Irrigation Council (Established under the Irrigation Act [11, p. 68]
157 D0506A	Discuss with government on cost sharing on irrigation programs
158 D0600	VI. Plant Industry Division [11, p. 69]
159 D0600A	Promote expansion of crops, especially vegetable production
160 D0600B	Control pests and predators of crops and livestock
161 D0601	1. Administration
162 D0601A	Maintain the Office of the Director of the Plant Industry Division
163 D0601B	Administrative expenses of the Division

Code	Organization and Policy
164 D0602	2. Crop Protection and Pest Control Branch
165 D0602A	Livestock insect control--cattle grubs and lice, black flies
166 D0602B	Crop insect control--grasshopper, bertha army worm
167 D0602C	Other cereal crops, insect control--pale western cutworm, the red-backed cutworm, wireworms
168 D0602D	Shelterbelt insect control--pear slugs, aphids, leaf miners, tent caterpillars, spruce saw fly
169 D0602E	Other insect control--beet webworm, sugarbeet root maggots, aphids, plant bugs, alfalfa weevils, the grey garden slug, glassy cutworm, rusty saw-toothed grain beetle, the strawberry root weevil
170 D0602F	Crop disease--bacterial ring rot, early blight, rhizoctonia, blackleg
171 D0602G	Fungicide seed treatment
172 D0602H	Animal Pest control--Norway rat control
173 D0602I	Other rabies vector control--pocket gophers, mice, ground squirrels, skunks, woodchucks, badgers, snakes, pack rats, bats, magpies, nuisance birds
174 D0602J	Coyote damage control
175 D0602K	Household insects--merchant grain beetle, the strawberry root weevil
176 D0603	3. Plant Industry Laboratory [11, p. 75]
177 D0603A	Coordinate provincial programs in the interrelated fields of entomology, zoology, botany and plant pathology
178 D0603B	Botany--plant identification, seed potato improvement, poisonous plant control
179 D0603C	Plant pathology--disease identification, extension and communication services, pesticide control and scientific publications on the proper management of agricultural chemicals across the Province.
180 D0604	4. Field Crops Branch [11, p. 79]

Code	Organization and Policy
181 D0604A	Ensure crop production technology in line with a market thrust concept. Provide farmers with guidance in:
182 D0604B	Cropping procedures
183 D0604C	Efficient production method
184 D0604D	Efficient marketing of field crops
185 D0604E	Maintain and coordinate the functions of Regional Plant Industry Division programs through division supervisors in the six agricultural regions. Improvement projects [11, p. 80] on:
186 D0604F	Cereal and oilseed crops (barley, rapeseed)
187 D0604G	Forage crops involving pedigree seed production [11, p. 81]
188 D0604H	Basic seed distribution programs
189 D0604I	Crop management assistance program
190 D0604J	Native range development and pasture improvement
191 D0604K	Demonstration and variety testing projects in various locations in the Province
192 D0604L	Alleviate economic distress through emergency assistance programs
193 D0604M	Implement the Seed Dealers Act [11, p. 82]
194 D0604N	Participate in the Royal Winter Fair
195 D0604O	Promote the apiculture industry
196 D0605	5. Crop Insurance
197 D0605A	Provide a provincial comprehensive all-risk insurance program
198 D0605B	Commercial weather modification project
199 D0606	6. Horticultural Branch [11, p. 83]
200 D0606A	Advisory service to the Provincial Planning Board, the management committee of the STEP Program and the Edmonton Regional Planning Commission

Code	Organization and Policy
201 D0606B	Secretarial service to the Alberta Horticultural Advisory Committee and the Potato Committee
202 D0606C	Supervise the Tree Advisory Committee
203 D0606D	Organize horticultural shows
204 D0606E	Help the Alberta Horticultural Association in their decision process
205 D0606F	Tree distribution and shelter belt extension
206 D0606G	Offer extension service in tree planting procedures
207 D0606H	Maintain provincial tree nursery productions
208 D0606I	Extension education on vegetable production
209 D0606J	Maintain an industry report
210 D0606K	Special service projects in potato tuber indexing
211 D0606L	Shelter belt production
212 D0606M	Fruit and vegetable seed production
213 D0606N	Tree fruit demonstration
214 D06060	Test orchards
215 D0606P	Gas plant trial on the effect of emissions from a new gas processing plant [11, p. 86]
216 D0607	7. Alberta Horticultural Research Center
217 D0607A	Applied research
218 D0607B	Produced specialized plant materials for the Province's shelterbelt program
219 D0607C	Development of new horticultural industries through management advice, new product development and evaluation and problem investigation
220 D0607D	Development and demonstration service
221 D0607E	Extension, consultative, and resource assistance to Departmental staff and other agencies of government

Code	Organization and Policy
222 D0608	8. Horticulture and Tree Nursery
223 D0608A	Promotion of the horticultural industry through assistance to commodity groups and pilot projects to increase specialty crops
224 D0608B	Promote domestic fresh vegetable consumption
225 D0608C	Promote production of shelterbelt trees and seedlings for reforestation program
226 D0608D	Provide extension, consultative and resource assistance to the Department and other agencies of government
227 D0609	9. Soils Branch [11, p. 88]
228 D0609A	Promote efficient use and protection of Alberta's agricultural soil resources
229 D0609B	Maintain publications and extension activities
230 D0609C	Soil conservation on dryland salinity
231 D0609D	Record trends in fertilizer use, both in type and quality
232 D0609E	Soil fertility, applied research on barley and rapeseed and acid soils
233 D0609F	Soil testing services for farmers, gardeners and greenhouse operators [11, p. 89]
234 D0609G	Feed and plant tissue analysis as a guide to fertilizer application for efficient crop production and as an aid in diagnosing plant problems (selenium, trace minerals and energy of feeds, tailings and revegetation)
235 D0609H	Soil and plant analysis data retrieval and use services
236 D0609I	Publications on plant nutrition and related problems
237 D0609J	Solonetzic soil reclamation
238 D0609K	Animal manure utilization
239 D0610	10. Weed control and Field Services Branch
240 D0610A	Weed control in agricultural crops
241 D0610B	Vegetation management on non-agricultural land

Code	Organization and Policy
242 D0610C	Administer the Noxious Weeds Act [11, p. 91]
243 D0610D	Weed inspection
244 D0610E	Weed surveys to keep track of noxious weed control
245 D0610F	Record and analyse the trend in chemical weed control in agriculture
246 D0610G	Support Alberta Weed Advisory Committee
247 D0610H	Applied research and demonstrations on weed control
248 D0610I	Coordinate field programs with the Agricultural Service Boards (The Weed Control Act) [11, p. 93]
249 D0610J	Extension training and liaison services in weed control
250 D0510K	Publications on the problems of weed control [11, p. 94]
251 D0700	VII. Animal Industry Division
252 D0701	1. Administration
253 D0701A	Operate the Office of the Director of the Animal Industry Division
254 D0701B	Administrative expenses of the division
255 D0702	2. Regulatory Services Branch
256 D0702A	Record livestock brands (Livestock Brand Inspection Act)
257 D0702B	License stockyards
258 D0702C	Regulate livestock marketing
259 D0702D	Operate pounds to control stray animals
260 D0702E	General livestock investigations
261 D0703	3. Dairy Branch
262 D0703A	Information, guidance and services to dairy producers and processors
263 D0703B	Dairy herd improvement service and milk testing program
264 D0703C	Collect and compile dairy statistics

Code	Organization and Policy
265 D0703D	Guidance and service for frozen food plants
266 D0704	4. Livestock Branch [11, p. 49]
267 D0704A	Development and improvement of a viable livestock industry (through education, promotion of sound production practices and the application of research results to production programs)
268 D0704B	Assist in legislation
269 D0704C	Livestock herd building
270 D0704D	Livestock marketing
271 D0704E	Administration of livestock policy
272 D0705	5. Poultry Branch [11, p. 58]
273 D0705A	Develop regulations, policies and programs
274 D0705B	Administer regulations, policies and programs relative to the poultry industry (Livestock and Livestock Products Act)
275 D0705C	Prevent and control poultry diseases
276 D0705D	Collect and compile data on production cost and industry outlook
277 D0705E	Conduct extension education and provide information on all phases of the industry
278 D0705F	Egg marketing
279 D0705G	Regulate poultry dealers
280 D0705H	Applied research demonstration and application of research findings
281 D0800	VIII. Veterinary Services Division
282 D0801	1. Administration
283 D0801A	Operate the Office of the Director of Veterinary Services Division
284 D0801B	Provide for administrative expenses of the Division
285 D0802	2. Veterinary Field Services

Code	Organization and Policy
286 D0802A	Extension services to support livestock health inspection at markets, herd health, livestock medicine control
287 D0802B	Departmental Emergency Planning
288 D0803	3. Fur Farms Branch
289 D0803A	Fur farm improvement
290 D0803B	Administer regulations related to fur farms (Alberta Regulations 52/72)
291 D0804	4. Veterinary Laboratory Services
292 D0804A	Veterinary laboratory services in diagnostic pathology, microbiology and toxiocology from the laboratories in Edmonton, Lethbridge and Fairview to practicing veterinarians, livestock producers and others
293 D0804B	Post mortem examinations on the cause of death
294 D0805	5. Analytical Services
295 D0805A	Conduct organic and inorganic analytical chemistry with emphasis on veterinary toxicology
296 D0805B	Tissue and fluid analysis for hospitals
297 D0805C	Analysis for ALCB, police forces and other agencies
298 D0805D	Chemical analysis of livestock water supplies
299 D0806	6. Meat Inspection
300 D0806A	Administer The Meat Inspection Act, 1972 and conduct small abattoirs' meat inspection service
301 E00	E. Assistant Deputy Minister: Marketing
302 E0000A	Promote marketing of raw and processed agricultural products domestically and internationally
303 E0001	1. Administration
304 E0001A	Co-ordinate all activities of the Marketing Division by providing necessary supervision and administrative support

Code	Organization and Policy
305 E0001B	Encourage the flow of ideas to develop the marketing sector
306 E0900	IX. Commodity Section [11, p. 113]/Commodity Support
307 E0900A	Expand agricultural product marketings by providing the necessary coordination, development, incentive and support to agricultural producers and commodity marketing organizations
308 E0900B	Create further marketing opportunities for Alberta's agricultural industry
309 E0901	1. Alberta Grain Commission (formed by Ministerial order, March 27, 1972)
310 E0901A	Conduct studies on all facets of the grain and oilseed industry in the Province
311 E0901B	Liase with other governments, groups or boards outside and within the Province as may be necessary to carry out the objectives of the Commission
312 E0901C	Effect operational plans to achieve the purpose of policies designated by the Minister of Agriculture
313 E0901D	Provide market information exchange service to enable buyers and sellers of feed grains to ascertain, bid and offer prices in all regions of the Province
314 E0901E	Ensure fair legal proceedings (as in the rapeseed prosecutions by the Canadian Wheat Board)
315 E0901F	Provide international market outlets for barley malt
316 E0901G	Develop and maintain market outlets for semi-processed feed grain products. ALFABAR and ALFABAR "R" [11, p. 113] (Alfalfa, barley, rapeseed composition).
317 E0902	2. The Alberta Dairy Control Board (Bill 72 amended the name The Milk Control Act to The Dairy Board Act and Alberta Milk Control Board to Alberta Dairy Control Board)
318 E0902A	Administer regulations on milk marketing (Regulations 74/72 on Alberta Plan for Milk Market Sharing; The Milk Control Order M.C. 001/72, 167/72, 168/72 and the Orders in Council 192/72, 494/72, 666/72 and 885/72)

	Code	Organization and Policy
319	E0903	3. Agricultural Products Marketing Council
320	E0903A	Support Marketing Boards and Commissions to expand and improve marketing opportunities for Alberta producers
321	E0903B	Administer regulations given in the Marketing of Agricultural Products Act
322	E01000	X. Product Development Section: Commissioner
323	E1000A	Promote development of new foods, new food marketing techniques. Alternative food uses as in the areas of potato granule production and extruded french fry formulation; frozen egg roll production; feasibility analysis for the expansion of rapeseed crushing; instruction in new techniques in cheddar cheese production; feasibility study at the University of Alberta's Food Science Department on the disposal and utilization of whey; possible grain processing for alcohol and starch
324	E1000B	Provide analytical services to the food industry and government
325	E1000C	Maintain quality standards to protect the consumer and the exporter
326	E1000D	Participate in the Priority Employment Program and conduct a survey to determine the milk supply and the economic feasibility of an expanded processing plant in Southwestern Alberta.
327	E1000E	A feasibility study of trout farming, fish feeds, fingerlings and fish eggs
328	E1000F	A feasibility study of a vacuum packaged parboiled potato processing industry
329	E1000G	Feasibility studies of a number of "new products", poultry products and related plants
330	E1001	1. Food Laboratory (transferred from the Animal Industry Division to the Marketing Division, April 1, 1972)
331	E1001A	Provide analytical and consulting services to the food industry

Code	Organization and Policy
332 E1001B	Ensure that food products produced in Alberta meet the quality and compositional standards established by Federal, Provincial and other authorities
333 E1001C	Provide analytical services to other Provincial agencies for their programs related to food contamination with agricultural chemicals, adulterants, selectivity of animals, etc.
334 E1001D	To develop new foods and alternative uses for Alberta products
335 E1100	XI. Market Development Section: Chief Commissioner
336 E1100A	Expand agricultural products marketing by establishing contracts with Boards, Commissions, processors, farm organizations and individual producers to know their marketing problems and facilitate their solution
337 E1100B	Assist in solving shipping, handling, and distribution problems through discussions with airline officials, railway and trucking firms
338 E1100C	Close liaison with the packing industry, the Alberta Red Meat Export Council
339 E1100D	Assist provincial commodity groups to display and promote the marketing of their products
340 E1100E	Organize a Chef's Gourmet Show in Edmonton and provide support for similar activities in the Province
341 E1100F	Maintain a refrigerated trailer to explain and promote new Agriculture Canada beef grades
342 E1100G	Help in planning the Magic Pantry Show at the Edmonton Exhibition
343 E1100H	Support the Brooks Chamber of Commerce with its product promotion tour and display
344 E1100I	Assist in feasibility studies including poultry plant study at Two Hills, a feed industry survey, a product identification survey
345 E1100J	Participate in marketing seminars held in Brandon, Edmonton, Vancouver and Abbotsford

Code	Organization and Policy
346 E1100K	Made arrangements for the Alberta Trade Mission to Japan and prepared printed material
347 E1100L	Organize meetings with alfalfa processors to form the Alfalfa Processors Association
348 E1100M	Organize tours for potential buyers of alfalfa, livestock feed, honey and animal breeding stock
349 E1100N	Cooperate with the Federal Department of Industry, Trade and Commerce
350 E11000	Serve as a clearing house for marketing information from home and abroad
351 E1100P	Help with two trial shipments of Kobe-type beef to Japan
352 E1101	1. Export Trade Commissioners
353 E1101A	Promote sale of Alberta products internationally
354 E1102	2. Domestic marketing
355 E1102A	Assess the potential of Canadian markets
356 E1102B	Promote marketing of Alberta agricultural products in Canada
357 E1200	XII. Consumer Market Section: Commissioner
358 E1200A	Improved urban/rural consumer understanding of information on Alberta food products, family living skills and the process of marketing
359 E1200B	Market information to support the marketing of Alberta products in Canada
360 E1300	XIII. Market Intelligence Division: Director
361 E1300A	Provide continuing market analysis, market education and statistical information services to expand provincial market development program
362 E1301	1. Field Services Branch [11, p. 132]. Market intelligence support to the regions in:
363 E1301A	Market development

Code	Organization and Policy
364 E1301B	Tax information to farmers
365 E1301C	Production and management information
366 E1301D	Business analysis
367 E1301E	Market information and education
368 E1302	2. Farm Management Branch (CANFARM)
369 E1302A	Provide farm planning and services
370 E1302B	Farm management services [11, p. 132]
371 E1303	3. Market Analysis Branch [11, p. 133]
372 E1303A	Provide market analysis to support government, farmers and others in marketing
373 E1303B	Provide commodity outlook information
374 E1303C	Business analysis
375 E1303D	Undertake market intelligence studies
376 E1304	4. Production Economics Branch
377 E1304A	Dairy study on production costs
378 E1304B	Investigate the problem of industrial milk production
379 E1304C	Assist in determining the economic feasibility of establishing poultry evisceration plant at Two Hills
380 E1304D	Provide a feasibility report on commercial hay cubing
381 E1304E	Provide a report on farm machinery costs
382 E1304F	Issue a corn and pea canning report for a cost of production study on the economics of producing the crops in irrigated areas of Alberta
383 E1304G	Maintain a consensus research data report (C.R.D.'s) on the production of wheat, barley, flax, rapeseed, sweet corn, potatoes, alfalfa, hay and seed, silage crops, cow-calf and lamb and wool enterprises
384 E1304H	Review method of study to provide more reliable information

Code	Organization and Policy
385 E1304I	Report on the milk production situation with respect to subsidy
386 E1304J	Issue a report on alfalfa transportation rates in the Province
387 E1305	5. Resource Economics Branch
388 E1305A	Determine the long term natural resource requirements of the agricultural industry
389 E1305B	Research dealing with natural resource matters of inter-departmental concern
390 E1305C	Cooperate and liaise with the Departments of Lands and Forests and Environment
391 E1306	6. Statistics Branch
392 E1306A	Collect, compile, analyse and disseminate agricultural statistics pertaining to Alberta
393 F1400	Minister without Portfolio: Rural Development
394 F1400A	Maintain an Office for the Minister Without Portfolio Responsible for Rural Development
395 F1400B	A training fund, some equipment and some wages to be utilized to promote community rationalization activities, designed to increase rural income and job opportunities (an A.R.D.A. program)
396 F1400C	Provide rural counsellors in accordance with the Alberta-Canada Small Farms Development Agreement
397 F1400D	Research on opportunities to develop rural communities and economic and social betterments
398 G1500	ALBERTA DEPARTMENT OF ADVANCED EDUCATION
399 G1500A	Provide technical education and vocational training programs in a variety of ways, inclusive of offerings in institutions, by contract or special arrangement with agencies or industries, or by special arrangement in temporary locations throughout the Province

Code	Organization and Policy
400 G1500B	Administer a priority employment training program to improve the employability of interested adults who are otherwise unemployed or underemployed
401 G1500C	Placement of trainees into programs irrespective of where or how the program is offered
402 G1501	1. Agricultural and Vocational Colleges Administration
403 G1502	2. Olds College
404 G1502A	Operate the college at Olds
405 G1503	3. Vermilion College
406 G1503A	Operate the college at Vermilion
407 G1504	4. Fairview College
408 G1504A	Operate the college at Fairview
409 H1600	ALBERTA LANDS AND FORESTS
410 H1600A	Manage public land resource with increasing emphasis on the promotion of environmental quality through inter-agency coordination
411 H1600B	Homestead Sales
412 H1600C	Sales and cultivation leases based on the farm and rural development regulations for land acquisitions
413 H1600D	Field inspections and appraisal of virgin lands
414 H1600E	Land use planning and conservation
415 H1600F	Grazing lease improvement
416 H1600G	Range management
417 H1600H	Land inventory and foothills resource allocation
418 H1601	1. Recreation Area Maintenance
419 H1601A	Maintain recreation sites in the forested areas of the Province

Code	Organization and Policy
420 H1602	2. Wildlife Damage Control
421 H1602A	Control nuisance wildlife causing damage to private, municipal and crown properties
422 H1603	3. Lands Division
423 H1603A	Selling, leasing, and issuance of dispositions conveying an interest in public lands
424 H1603B	Manage public land, including appraisals and inspections
425 H1603C	Operate provincial grazing reserves
426 I1700	ALBERTA DEPARTMENT OF MUNICIPAL AFFAIRS
427 I1700A	Operate a land use planning data bank [19, p. 25]
428 I1700B	Carry out regional planning
429 I1700C	Participate in agricultural programs under 13 Agricultural Service Board Officers [19, p. 27]
430 I1700D	Assist rate payers with advice on their property tax problems with respect to the administration of the Tax Recovery Act [19, p. 30]
431 I1700E	Administer public land reserves in Improvement Districts and special areas
432 I1700F	Lease land through long term grazing leases, cultivation leases and annual permits in special areas
433 I1700G	Implement government policy on exchange of lands to give assistance to those Improvement District residents having a need to consolidate their holdings for the purpose of establishing economic farm units
434 I1701	1. Tax Recovery Branch
435 I1701A	Provide a service to all municipal authorities relating to tax recovery proceedings and collection of taxes
436 I1701B	Responsible for land sales and collections in respect thereto in the special areas and Improvement Districts
437 I1702	2. Liaison Office

Code	Organization and Policy
438 I1702A	Support the Special Advisory Committee on Communal Properties
439 I1703	3. Assessment--Alberta Assessment Appeal Board
440 I1703A	Decide on assessment appeals under the Assessment Appeal Board Act, Municipal Taxation Act, Electric Power and Pipeline Assessment Act, Municipalities Assessment and Equalization Act, Irrigation Act, and the Railway Assessment Act
441 I1704	4. Field Service Branch
442 I1704A	Administer the 24 Improvement Districts, which are unorganized areas without elected municipal councils
443 I1705	5. Special Areas Board
444 I1705A	Administer Special Areas, which comprise 5.2 million acres in the south-eastern part of the Province
445 J1800	ALBERTA DEPARTMENT OF HEALTH AND SOCIAL DEVELOPMENT
446 J1800A	Administer regulations governing health in the Province
447 J1800B	Administer regulations establishing bacterial standards for fluid milk retailed in the Province [1, p. 6] (Alberta Regulations 57/71 and 84/71, O.C.'s 324/71) [18, p. 6]
448 J1800C	Supervise the disposal of harmful materials, e.g. DDT stocks
449 J1800D	Ensure proper treatment of liquid industrial wastes at the sugar refineries at Taber and Picture Butte
450 J1800E	Control the outbreak of rabies in wildlife
451 J1800F	Maintain health standards in the transportation of frozen and perishable foods by trucks
452 J1800G	Ensure sanitation at feed lots and pig keeping operations
453 J1800H	Maintain bacterial standards for soft ice cream
454 J1800I	Control air pollution

Code	Organization and Policy
455 J1800J	Control water pollution
456 J1800K	Conduct public health inspection, e.g., bacterial quality of pasteurized milk due to length of storage in refrigeration at retail stores
457 J1800L	Support social planning and development [18, p. 20]
458 J1800M	Implement a Metis rehabilitation program [18, p. 20]
459 J1800N	Provide emergency welfare services
460 K1900	ALBERTA DEPARTMENT OF CULTURE AND YOUTH AND RECREATION
461 K1901	L. Recreation Branch
462 K1901A	Support recreation, physical fitness and appreciation of the environment through coordinating services and outdoor education programs and a major portion of expenditure in direct grants to municipalities in support of municipal recreation projects
463 K1902	2. 4-H and Junior Forest Warden's Branch
464 K1902A	Administer 4-H and Junior Forest Warden Clubs
465 K1903	3. Planning and Development Branch
466 K1903A	Direct planning and development of services and organization procedures for groups, communities and individuals in the areas of culture, youth and recreation
467 L2000	ALBERTA DEPARTMENT OF THE ENVIRONMENT
468 L2000A	Process applications for approval under the Clean Air and Clean Water Acts
469 L2000B	Develop performance standards for special types of projects [16, p. 8]
470 L2000C	Ensure release of treated waste waters to Alberta watershed areas
471 L2000D	Administer regulations for intensive livestock operations' waste management systems

Code	Organization and Policy
472 L2000E	Operate groundwater exploration, inventory and development
473 L2000F	Appraise and develop liquid and solid waste management methods
474 L2000G	Shallow water table, aquifer contamination investigations
475 L2000H	Resource development appraisal
476 L2000I	Dryland groundwater discharge control involving dryland seepage and salinity survey using aerial photographic materials and municipal assessment records
477 L2000J	Soil resource classification
478 L2000K	Seepage control and land damage assessment in irrigation districts
479 L2000L	Watershed research
480 L2000M	Administer Water Resources Act for licenses to divert and use water for all purposes
481 L2000N	Provide information on the distribution and magnitude of surface water resources of the Province, including average yearly and/or seasonal values, probable fluctuations and frequencies of rare events in hydrological cycle for proper water use allocation; reservoir, canal and spillway design; flood warning and control; flood plain planning and management of impounded water
482 L2000O	Provide service for stability of the bed and banks of waterways (pipeline crossings, river diversion, bank protection, bridges, water intakes) and the susceptibility of and protection against flooding of lands bordering on bodies of water or serious channel shifting [16, p. 23]
483 L2000P	Appraise, purchase and legally control land
484 L2000Q	Evaluate property damage including responsibility for the acquisition of rights of way or land required for all programs
485 L2000R	Investigate complaints and damage claims
486 L2000S	Arrange for temporary access and permission to enter private lands

Code	Organization and Policy
487 L2000T	Search for titles and arrange for removal of reservations on Crown land
488 L2000U	Ensure that necessary legal surveys are approved and registered [16, p. 23]
489 L2001	1. Water Resources Management Division
490 L2001A	Administer water resource programs
491 L2001B	Implement provincial water development projects
492 L2001C	Enforce water resource legislation
493 L2001D	Operate water resource regional offices
494 L2002	2. Environmental Protection Services: Pollution Control Division
495 L2002A	Administer the Beverage Container Act
496 L2002B	Sample and monitor air and water pollution
497 L2002C	Issue permits for use of agricultural chemicals
498 L2002D	Provide environmental laboratory services
499 L2002E	Clean Water Act
500 L2002F	Clean Air Act
501 L2002G	Agricultural Chemicals Act
502 L2003	3. Environmental Planning and Research Services: Interdepartmental Relations and Land Conservation Division
503 L2003A	Secretarial service
504 L2003B	Develop interdepartmental roles for other departments and agencies
505 L2003C	Administer Surface Reclamation Act, Land Development Program
506 L2003D	Develop interdepartmental environmental referral systems and committees

Code	Organization and Policy
507 L2003E	Provision of departmental impacts including coal mines, quarries, transmission lines, oil spills, highways, subdivisions, land allocation, etc.
508 L2003F	Administer environmental impact studies
509 L2003G	Project funding for Conservation and Utilization Committee
510 M2100	ALBERTA DEPARTMENT OF INDUSTRY AND COMMERCE
511 M2101	1. Economic Development
512 M2101A	To direct economic development in the regions
513 M2102	2. International Marketing
514 M2102A	To develop export marketing capability of Alberta manufacturers, processors, and service industries and promote Alberta products in world markets
515 M2103	3. Industry Sector
516 M2103A	To promote growth and diversification of Alberta's manufacturing and processing industry
517 M2104	4. Industrial Development
518 M2104A	Promote a regional program to encourage the expansion of secondary manufacturing
519 M2104B	Attract new industries into the Province
520 M2105	5. Transport Research and Development
521 M2105A	Solve transport problems that limit industry and commerce
522 M2106	6. Lesser Slave Lake Projects
523 M2106A	Market research
524 M2106B	Counselling to new industries
525 M2107	7. Research Council of Alberta

Code	Organization and Policy
526 M2107A	Research and technical services for the public and government
	ALBERTA DEPARTMENT OF THE ATTORNEY GENERAL
	Land Titles Office--Calgary
527 N2200A	Register all documents pertaining to land south of the 9th base-line
	Land Titles Office--Edmonton
528 N2200B	Register all documents pertaining to land north of the 9th base-line

APPENDIX C

GENERAL MATRIX TABLE*
PART I

1A0000 1111011111C1		11111	1101	40495	386341048	3	13000	0	1	1
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4A0000C1110000111C1A00		61111	0	0	0	0	0 0	0	2	4
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6A0000E1211CC000C1C0ACC		51111	0	0	0	0	0 0	0	2473	
7A0000F1211CCCCCC1CCACC		51111	0	0	0	0	0 0	0	2474	
8B00 1110001010C1A00		61111	0	0	0	0	3 15 200	0	2	5
9B0100 2210011101CC1B0C		61111	1102	396410	2259411754	0	0 0	0	0	6
10B0100A22101CC0CC0CCB010C		61111	0	0	0	0	0 0	0	1527	
11B0100B221C1CC0CCC0CB0100A		61111	0	0	0	0	0 0	0	1528	
12B0100C22101CCCCC0CCB0100B		11111	0	0	0	0	0 0	0	2529	
13B0100D321C1C000C0CCB0100C		11111	0	0	0	0	0 0	0	1530	
14B0101 3210011101CC1B0100		51111	1105	425187	3819261113	12	19 631	0	1	8
15B0101A321C011101CC1B01C1		51111	0	0	0	0	0 0	0	1	9
16B0101B3210C11101CC1B01C1		51111	0	0	0	0	0 0	0	1	10
17B0101C3210011101CC1B01C1		51111	0	0	0	0	0 0	0	1	11
18B0101D321CC111C1CC1B01C1		51111	0	0	0	4	7 571	0	1	12
19B0101E421C1CCCCCCCBC101		61111	0	0	0	0	0 0	0	1524	
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21B0101G421C1CCCC000CB01C1		61111	0	0	0	0	0 0	0	1526	
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25B0102C3210011101CC1B01C2		67111	0	0	0	0	0 0	0	1	16
26B0103 321C011101CC1B010CC		21111	1108	115440	635941815	5	6 633	0	1	17
27B0103A3210011101CC1B0103		21111	0	0	0	0	0 0	0	1	18
28B0103B3210C11101CC1B0103		21111	0	0	0	0	0 0	0	1	19
2930104 3210011101CC1A0C		21111	1103	257392	1763731459	0	0 0	0	1	20
30B0104A3210011101CC1B01C4		21111	0	0	0	0	0 0	0	1	21
31B0105 321001110 1CC1B01CCC		51311	1104	437650	549250 796	0	0 0	0	1	22
32B0105A3210C111C11C1B0105		51311	0	0	0	0	0 0	0	1	23
33B0105B3210C000C1CCB01C5	DC704C123F1	0	0	0	0	0	0 0	0	2511	
34B01C5C3210C000001CCB01C5	DC703B12311	0	0	0	0	0	0 0	0	2512	
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37B0105F3210C000C01CCB0105	12311	0	0	0	0	0	0 0	0	2515	
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40B0200B3210011101CC1B0200		21111	0	0	0	0	0 0	0	2	26
41B0200C321C011101CC1B0200		21111	0	0	0	0	0 0	0	4	27
42C00 12100111101CC1BCC		61111	0	0	0	0	0 0	0	2	28
43C0300 2210011 1C11C1C0C		21111	0	0	0	0	0 0	0	1	29
44C0301 3210011101101C0300		21111	0	0	0	0	0 0	0	2	30
45C0301A32100111C11C1CC3C1	D0609B21111	0	0	0	0	0	0 0	0	1	31
46C0302 3210C111C11C1C0300		21111	0	0	0	0	0 0	0	1	32
47C0302A321C0111011C1C0302		22111	0	0	0	0	0 0	0	1	33
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49C0302C3210011101101C0302		22111	0	0	0	0	0 0	0	1	35
50C0302D321C0111C11C1C0302		22111	0	0	0	0	0 0	0	1	36
51C0303 321C011101CC1C0300		21111	1160	324189	2809531153	17	22 772	1	1	37
52C0303A3210011101001C0303		61111	0	0	0	0	0 0	0	1	38
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54C0303C321C0111C11C1CC303		65111	0	0	0	0	0 0	0	1	40
55C0303D3210C11101CC1C03C3		61111	0	0	0	0	0 0	0	2	41
56C0303E321CC11101CC1C0303		61111	0	0	0	0	0 0	0	1	42
57C0303F321C0111010C1C0303		67111	0	0	0	0	0 0	0	1	43
58C0304 321C011101CC1C0300		25111	0	0	0	0	0 0	6	1	44
59C0304A3210011C11C1C03C4		21111	0	0	0	0	0 0	0	2	45
60C0304B3210011101101CC3C4		25111	0	0	0	0	0 0	0	2	46

* Interpretation of columns see Table 3.2

61C0304C321C0111C1101C0304	25111	0	0	0	0	0	0	0	0	2	47
62C0305 321C0111010C1C0300	51111	0	0	0	0	4	41000	0	1	48	
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65C0305C321C0111C1C01C03C5	51111	0	0	0	0	0	0	0	2	51	
66C0305D321CC11101CC1C0305	51111	0	0	0	0	0	0	0	2	52	
67C0305E321C011101CC1C0305	51111	0	0	0	0	0	0	0	1	53	
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80C0309C321C011101CC1C03C5	E0SC1E21121	1162	311677	2936531061	19	22 863	0	1	65		
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82C03C9E321C011101CC1C0305	21121	1165	418498	3486871200	17	19 894	5	1	67		
83C0309F321CC111C1CC1C03C5	EC5C1E21121	1166	362984	3087461175	23	221045	5	1	68		
84C0309G321C011C11C1C03C5	EC5C1E21121	1167	354389	3011521176	19	21 904205	1	69			
85C040D 221C011101CC1CC0	51111	1170	54496	508311072	1	11000	1	1	70		
86C0401 321111110C1C0400	51111	0	0	0	0	0	0	0	1	71	
87C0401A321C0111C1C01C0401	61111	0	0	0	0	0	0	0	2	72	
88C0401B321101111C111C1CC4C1	55111	0	0	0	0	0	0	0	1	73	
89C0401C121C0100C1111C0401B	51111	1171	697068	0	0	0	0	0	0	1505	
90C0402 321C011101101C0401	56111	1173	519526	4332251199	2	21000	0	1	74		
91C0402A321C011101101C0402	56111	0	0	0	0	0	0	0	4	75	
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113C0405J321C011C11C1C0405	52112	0	0	0	0	0	0	0	2	97	
114C0405K321C011C1101C0405	52112	0	0	0	0	0	0	0	1	98	
115C0405L321C011C1101C0405A	52112	0	0	0	0	0	0	0	1	99	
116C0405M321C011101101C0405B	67113	0	0	0	0	0	0	0	1	100	
117C0406 521C011C1101C0401D	62111	1176	248364	1462431698	0	0	0	0	0	1101	
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120C0407 421C011101101C04C1B	31112	1179	8933	0	0	0	0	0	0	1104	

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122C0407B321CCCC0000CCC0407	21121	0	0	0	0	0	0	0	0	1516
123C0407CC2100C00000C0C0407	M2106B21121	0	0	0	0	0	0	0	0	1476
124C0408 521CCC000C0CCC0400	51111	0	0	0	0	0	0	0	0	1531
125C0408A52101CC0CC0C0CC408	52111	0	0	0	0	0	0	0	0	1532
126C0408B521C1C0CC0000C04CEA	52111	0	0	0	0	0	0	0	0	1533
127D00 12100111C11C1BCC	12111	0	0	0	0	0	0	0	0	1106
128D0500 22100111011C1D0C	52111	0	0	0	0	0	0	0	0	1107
129D0500A2210011IC1101D0500	C04C4A52111	0	0	0	0	0	0	0	0	1108
130D0500B2210011101IC1D0500	C04C4A52111	0	0	0	0	0	0	0	0	2109
131D0500C2210C111C1101D0500	22111	0	0	0	0	0	0	0	0	4110
132D0500D2210011IC11C1D0EC0	C04C4A52111	0	0	0	0	0	0	0	0	1111
133D05C0E2210011IC11C1D0500	52111	0	0	0	0	0	0	0	0	1112
134D0501 32100111C11C1D0500	52111	1110	0	0	0	0	0	0	0	1113
135D0501A32100111C11C1D05C1	62111	0	0	0	0	0	0	0	0	1114
136D0501B3210011IC11C1DC501	62111	0	0	0	0	0	0	0	0	1115
137D0502 3210011IC1101D05C0C	22111	1111103322031031	8801001		6	45	133	0		1116
138D0502A3210C111011C1D0502	22112	0	0	0	0	0	0	0	0	1117
139D0502B321CC111011C1D05C2A	22111	0	0	0	0	0	0	0	0	1118
140D0502C3210011101IC1D0502	12112	0	0	0	0	0	0	0	0	1119
141D0503 3210011101IC1D0500D	52111	1112	377742	0	0	0	0	0	12	1120
142D0503A3210011101101D05C3	C04C4A52111	0	0	0	0	0	0	0	0	1121
143D05C3D3210011101IC1D0503	C0404A52111	0	0	0	0	0	0	0	0	1122
144D0504 3210011101101C0502A	52111	0	0	0	0	17	36	472	0	1123
145D0504A3210011101101D0504	52111	0	0	0	0	0	0	0	0	4124
146D0505 3210011101IC1D05C2A	22112	1113	63279	0	0	8	12	666	0	1125
147D0505A3210011101IC1D05C5	22111	0	0	0	0	0	0	0	0	4126
148D0505B2210011IC11C1D05C5	22111	0	0	0	0	0	0	0	0	4127
149D0505C3210011101IC1D0505	L2CCC122111	0	0	0	0	0	0	0	0	1128
150D0505D3210011101IC1D05C5	L2CCCJ22111	0	0	0	0	0	0	0	0	1129
151D0505E321C011101101D0505	L2CCCK22111	0	0	0	0	0	0	0	0	1130
152D0505F321C011101101D05C5	22111	0	0	0	0	0	0	0	0	1131
153D0505G3213011101IC1D05C5	L2CCCH22111	0	0	0	0	0	0	0	0	1132
154D0505H021C0C0CC00CCD0505AL	2CCCG52211	0	0	0	0	0	0	0	0	1477
155D0505IC21CCCC0C0CCD05C5	22211	0	0	0	0	0	0	0	0	1478
156D0506 5210011101IC1D0500	22111	0	0	0	0	0	0	0	0	1133
157D0506A5210011101IC1D0506	I1703A42111	0	0	0	0	0	0	0	0	1134
158D0600 2210011IC11C1DC0	52111	0	0	0	0	0	0	0	0	1135
159D0600A2210C111011C1DC600	52111	0	0	0	0	0	0	0	0	1136
160D0600B2210011101101D06C0	H16C2A52111	0	0	0	0	0	0	0	0	1137
161D0601 3210011101CC1D0CC0	62111	1120	70227	444901578	0	0	0	0	0	1138
162D0601A3210011101CC1D06C1	62111	0	0	0	0	0	0	0	0	1139
163D0601B3210011101CC1DC601	62111	0	0	0	0	0	0	0	0	1140
164D0602 3210011101IC1D06C0B	52111	1124	316860	2626451206	11	24	458	0		1141
165D0602A3210011101101D06C2	52311	0	0	0	0	0	0	0	0	1142
166D0602B3210011IC11C1D06C2	52211	0	0	0	0	0	0	0	0	1143
167D0602C3210011101101D06C2	52211	0	0	0	0	0	0	0	0	1144
168D0602D3210011101IC1DC6C2	52711	0	0	0	0	0	0	0	0	1145
169D0602E3210011101IC1DC6C2	52711	0	0	0	0	0	0	0	0	1146
170D0602F321C011001C1DC6C2	52211	0	0	0	0	0	0	0	0	1147
171D0602G3210011101101D06C2	52211	0	0	0	0	0	0	0	0	1148
172D0602H3210011101IC1DC602	J1800E52311	0	0	0	0	0	0	0	0	1149
173D0602I3210011101101C1DC602	52711	0	0	0	0	0	0	0	0	1150
174D0602J321C011101IC1DC6C2	H1602A52211	0	0	0	0	0	0	0	0	1151
175D0602K3210011101IC1DC602	52711	0	0	0	0	0	0	0	0	1152
176D0603 32100111C11C1DC600	22111	0	0	0	0	0	0	0	0	1153
177D0603A3210011101IC1DC603	22111	0	0	0	0	0	0	0	0	4154
178D0603B3210C111C1101DC603	22111	0	0	0	0	0	0	0	0	1155
179D0603C3210011101IC1DC603	22111	0	0	0	0	0	0	0	0	1156
180D0604 3210011101101D06C0	22211	11223389C80	549085****		11	16	687	2		1157

181D0604A32101111C11C1D0E604	52211	0	0	0	0	0	0	0	0	4158
182D0604B32100111011101D0E04A	52211	0	0	0	0	0	0	0	0	1159
183D0604C32101111011C1D0E64A	52211	0	0	0	0	0	0	0	0	2160
184D0604D32101111011C1D0E604	52211	0	0	0	0	0	0	0	0	2161
185D0604E32100111011C1D0E64	52211	0	0	0	0	0	0	0	0	4162
186D0604F32100111C11C1D06C4	52211	0	0	0	0	0	0	0	0	1163
187D0604G32100111011C1D06C4	52211	0	0	0	0	0	0	0	0	1164
188D0604H32100111C11C1D0E64	52211	0	0	0	0	0	0	0	0	1165
189D0604I32100111C1101D0604AC03C1A	52211	0	0	0	0	0	0	0	0	2166
190D0604J321CC111C11C1DC604	52211	0	0	0	0	0	0	0	0	1167
191D0604K32100111C11C1DC604 C03C1A	52211	0	0	0	0	0	0	0	0	1168
192D0604L32100111011C1D06C4	52211	0	0	0	0	0	0	0	0	2169
193D0604M32100111C1101DC604	12211	0	0	0	0	0	0	0	0	1170
194D0604N321C0111011C1DC604	52211	0	0	0	0	0	0	0	0	1171
195DC604C32100111011101DC6C4	52611	0	0	0	0	0	0	0	0	1172
196D0605 32100111011C1DC600	52211	1121131	70001	498000	879	0	0	0	0	1173
197D0605A32100111011C1D0605	52211	0	0	0	0	0	0	0	0	1174
198D0605B321C0111011D0E05	52211	0	0	0	0	0	0	0	0	1175
199D0606 32100111011C1DC600	22511	0	0	0	0	0	0	0	0	1177
200D0606A32100111C1101D06C6	22511	0	0	0	0	0	0	0	0	4178
201D0606B32100111C11C1D06C6	62511	0	0	0	0	0	0	0	0	1179
202D0606C32100111011101D06C6	12511	0	0	0	0	0	0	0	0	1180
203D0606D32100111011C1D0E06	52511	0	0	0	0	0	0	0	0	1181
204D06C6E32100111C11C1D0606	22511	0	0	0	0	0	0	0	0	4182
205D06C6F321C0111C11C1D0606	52511	0	0	0	0	0	0	0	0	1183
206D0606G32100111011C1DCEC6FC03C1A	52511	0	0	0	0	0	0	0	0	1184
207D0606H32100111CC1C1D0606	52511	0	0	0	0	0	0	0	0	1185
208D0606I32100111C11C1DC6C6 C0301A	52511	0	0	0	0	0	0	0	0	1186
209D06C6J321C0111C11C1DC6C6	52511	0	0	0	0	0	0	0	0	1187
210D0606K3210C111011C1DC6C6	22511	0	0	0	0	0	0	0	0	1188
211D0606L021CCCCCCCCCCD0606	52421	0	0	0	0	0	0	0	0	1479
212D0606M0210CCCCCCCCD06C6	52521	0	0	0	0	0	0	0	0	1480
213D0606N021CCCCCCCCCD06C6	22421	0	0	0	0	0	0	0	0	1481
214D0606O021CCCCCCCCCD0606	22521	0	0	0	0	0	0	0	0	1482
215D06C6P0210CCCCCCCCD0606 L2003F	22521	0	0	0	0	0	0	0	0	1483
216D0607 4210C111011C1DC606	22511	1125	409499	3519511163		0	0	0	0	1189
217D06C7A4210C111C1101DC6C7 C0301A	22511	0	0	0	0	0	0	0	0	1190
218D06C7B421CC111011C1DC60F	52511	0	0	0	0	0	0	0	0	1191
219D0607C421CC111011C1DC607	22511	0	0	0	0	0	0	0	0	1192
220D0607DC21CCCCCCCCCD0607	52521	0	0	0	0	0	0	0	0	1484
221D06C7EC21CCCCCCCCCD0607	22511	0	0	0	0	0	0	0	0	1485
222D0608 4210C111011C1DC6C6	52511	1126	427111	3279631302		11	68	161	22	1193
223D0608A4210C111011C1D0EC8	52511	0	0	0	0	0	0	0	0	2194
224D0609B4210C111C11C1CC6C8	53511	0	0	0	0	0	0	0	0	1195
225DC608C421CC111011C1DC607B	52511	0	0	0	0	0	0	0	0	1196
226D0608D421CC111C11C1D0607 C0301A	52511	0	0	0	0	0	0	0	0	1197
227D0609 3210C111C11C1DC6C0	22111	1127	260789	2328491119		7	23	304	1	1198
228DC609A32100111011C1D0605 C0404A	22111	0	0	0	0	0	0	0	0	2199
229D0609B32100111011C1D0EC5A	22111	0	0	0	0	0	0	0	0	1200
230D0609C32100111011101D06C5AC0404A	22111	0	0	0	0	0	0	0	0	1201
231D06C9D3210C111C11C1DC6C5A	22111	0	0	0	0	0	0	0	0	1202
232D06C9E32100111011C1DC6C5A	22111	0	0	0	0	0	0	0	0	1203
233D06C9F32100111011101D0605A	22111	0	0	0	0	0	0	0	0	1204
234D06C9G321CC111C11C1DC6C5A	22111	0	0	0	0	0	0	0	0	1205
235DC6C9H321C0111C1101D06C5A	22111	0	0	0	0	0	0	0	0	1206
236D06091321CC111C1101DC6C5A	22111	0	0	0	0	0	0	0	0	1207
237D0609J021CCCCCCCCCCDC605 L2CCC1	52211	0	0	0	0	0	0	0	0	1486
238D0609K021CCCCCCCCCDC6C5 L200CD	22311	0	0	0	0	0	0	0	0	1487
239D0610 32100111011101D06C0	52111	1123	208739	1641091271		6	9	666	1	1208
240D0610A32100111011101D0610	52112	0	0	0	0	0	0	0	0	1209

241D0610B3210C1110110101D0610		52112	0	0	0	0	0	0	0	0	1210
242D0610C3210011101101D0610		12112	0	0	0	0	0	0	0	0	1211
243D0610D3210011101101D0610C		12112	0	0	0	0	0	0	0	0	1212
244D061CE3210011101101D0610C		12112	0	0	0	0	0	0	0	0	1213
245D061CF3210011101C1D0610C		22111	0	0	0	0	0	0	0	0	1214
246D0610G3210011101101D0610C		22111	0	0	0	0	0	0	0	0	1215
247D0610H3210C111C11C1D0610		22111	0	0	0	0	0	0	0	0	1216
248D0610I3210011101C1D0610	C0301A	52111	0	0	0	0	0	0	0	0	1217
249D061CJ3210C111CC1C1D0610	C0301A	52111	0	0	0	0	0	0	0	0	1218
250D0610K3210011101C11C1CC610J		22111	0	0	0	0	0	0	0	0	1219
251D0700 2210011101101C1D0C		52111	1130	92445	117231	788	0	0	0	0	1220
252D0701 3210C111C11C1D0700		62111	0	0	0	0	0	0	0	0	1221
253D07C1A3210C11101CC1D07C1		62111	0	0	0	0	0	0	0	0	1222
254D0701B3210011101CC1D07C1		62111	0	0	0	0	0	0	0	0	1223
255D0702 3210011101101C1D07C0		12311	1131	577306	5172011116	20	171176	0	0	0	1224
256D0702A3210C1110110C1D0702		12311	0	0	0	0	0	0	0	0	1225
257D0702B3210011101101D07C2		12311	0	0	0	0	0	0	0	0	1226
258D0702C3210011101101D07C2		12311	0	0	0	0	0	0	0	0	2227
259D0702D3210C111011C1D07C2		12311	0	0	0	0	0	0	0	0	1228
260D0702E3210011101101C1D07C2		12311	0	0	0	0	0	0	0	0	1229
261D0703 3210011101101D0700		52311	1132	431488	411348	1048	2	8	250	0	1230
262D0703A3210C1110110C1D07C3	C03C1A	52311	0	0	0	0	0	0	0	0	2231
263D0703B3210011C11C1D0703AJ1E00B		52311	0	0	0	0	0	0	0	0	2232
264D0703C3210C1110110C1D07C3B		22311	0	0	0	0	0	0	0	0	1234
265D0703D3210011C1101D0703AJ1EC0A		22312	0	0	0	0	0	0	0	0	1235
266D0704 3210C1110110101D07C0		52311	1135	425345	2500821700	10	40	250	2	0	1236
267D0704A3210011C1101D07C4		52311	0	0	0	0	0	0	0	0	2237
268D0704B3210C111C11C1D07C4A		22311	0	0	0	0	0	0	0	0	4238
269D0704C3210C1110110101D07C4A		52311	0	0	0	0	0	0	0	0	1239
270D0704D3210C111C110101C07C4		53311	0	0	0	0	0	0	0	0	1240
271D0704E32100C0000CCCD07C4B		12311	0	0	0	0	0	0	0	0	2517
272D0705 3210C0111C1101C0700		52311	1133	218049	221196	985	1	52	19	4	1241
273D07C5A3210C0111011C1D07C5		52311	0	0	0	0	0	0	0	0	1242
274B0705B3210C0111011C1DC7C5AC03C1A		22311	0	0	0	0	0	0	0	0	1243
275D0705C3210011C11C1D07C5B		12311	0	0	0	0	0	0	0	0	1244
276D0705D3210011101101D07C5B		22311	0	0	0	0	0	0	0	0	1245
277D0705E3210C0111C11C1D07C5DC03C1A		52311	0	0	0	0	0	0	0	0	1246
278D0705F3210011101101C1D07C5BC03C1A		53311	0	0	0	0	0	0	0	0	2247
279D0705G3210011101101D07C5B		12311	0	0	0	0	0	0	0	0	1248
280D0705H32100C00CC0CCD07C5		52221	0	0	0	0	0	0	0	0	1518
281D0800 2210C0111011C1C0C		52311	0	0	0	0	0	0	0	0	1249
282D0801 3210011101CC1D0E00		62111	1140	98487	103799	948	0	0	0	0	1250
283D0801A3210011101C1C0E01		62111	0	0	0	0	0	0	0	0	1251
284D0801B3210C111C11C1D0EC1		62111	0	0	0	0	0	0	0	0	1252
285D0802 3210011101101C1D0E00		21311	1141	466074	4588431015	8	16	500205			1253
286D0802A3210011101101C1D0E02	C0301A	21311	0	0	0	0	0	0	0	0	1254
287D0802B3210011101101D0E02		52311	0	0	0	0	0	0	0	0	4255
288D0803 3210011101101C0E00		52611	0	0	0	0	1	11000	0		1256
289D0803A3210011101101C1D0E03		52611	0	0	0	0	0	0	0	0	2257
290D0803B3210011101101C1D0EC3A		12611	0	0	0	0	0	0	0	0	1258
291D0804 3210011101101C1D0EC0		22111	1142	464843	3967521171	19	32	593	0		1259
292D0804A3210011101101D0E04		21111	0	0	0	0	0	0	0	0	1260
293D0804B3210011101101C1D0EC4A		22111	0	0	0	0	0	0	0	0	1261
294D0805 3210011101101C1D0E00		21111	1143	122265	1123581088	0	0	0	0		1262
295D0805A3210011101101C1D0E05		21111	0	0	0	0	0	0	0	0	1263
296D0805B3210C111011CCD0EC5A		21111	0	0	0	0	0	0	0	0	1264
297D0805C3210011101101D0EC5		21711	0	0	0	0	0	0	0	0	1265
298D0805D32100CCCCCCCCDC0EC5A		22311	0	0	0	0	0	0	0	0	1519
299D0806 3210011101101C1D0E00		11311	1144	0	0	0	0	0	0	0	1266
300D0806A3210011101101C1D0EC6		11311	0	0	0	0	0	0	0	0	1267

301EC0 1210C111011C1B0C	53111	0	0	0	0	0	0	0	0	1268
302E0000A1211111101101E0C	53111	0	0	0	0	0	0	0	0	2269
303E0001 121C111101C01E0C00A	63111	1150	118317	866471365	0	0	0	0		1270
304E0001A1210111101CC1E0CC1	63111	0	0	0	0	0	0	0		2271
305E0001B1210111101101E0001A	23111	0	0	0	0	0	0	0	0	3272
306E0900 2211111101C1E0C	53111	1152	209612	496834218	0	0	0	0		1273
307E090CA2211111101101EC900	53111	0	0	0	0	0	0	0	0	2274
308E0900B2211111C11C1EC900A	53111	0	0	0	0	0	0	0	0	3275
309E0901 521C1111C1101A0C	53211	0	0	0	0	0	0	0	0	1276
310EC901A5210111101C1EC900A	53211	0	0	0	0	0	0	0	0	1277
311EC901U521C1111011C1EC900A	53211	0	0	0	0	0	0	0	0	2278
312E0901C5210111101101EC900A	53211	0	0	0	0	0	0	0	0	4279
313E0901D5210111101101EC900A	23211	0	0	0	0	0	0	0	0	3280
314E090CE521C1111011C1EC900A	63211	0	0	0	0	0	0	0	0	1281
315E0901F521C1111C1101E090C0A	53211	0	0	0	0	0	0	0	0	1282
316EC901G5210111101101EC900A	53211	0	0	0	0	0	0	0	0	1283
317E0902 5210111101CC1E0900A	13311	1153	154003	903351704	0	0	0	0		1284
318E0902A521C1111011C1E0900A	13311	0	0	0	0	0	0	0	0	3295
319E0903 5211111101C1EC900A	53311	1157	71005	79251	895	5	51000	0		1286
320E09C3A5211111101C1E0900A	53311	0	0	0	0	0	0	0	0	1287
321E09038521011110C1C1EC900A	133111000000	0	0	0	0	0	0	0		1288
322E1000 2211111C11C1E0C	53111	1154	422056	2011672097	0	0	0	0		1289
323E1000A2211111101101E0C00A	53111	0	0	0	0	0	0	0	0	1290
324E1000D2210111C11C1E0CC0A	23111	0	0	0	0	0	0	0	0	1291
325E1000C221C1111011C1E0000AJ1E00B13111		0	0	0	0	0	0	0	0	3292
326E1000D2210111C11C1E1000A	23111	0	0	0	0	0	0	0	0	1293
327E1000E421C0C0CCC0CCE1CC0	52611	0	0	0	0	0	0	0	0	1488
328E1000FC21C0C000C00CE1000	22411	0	0	0	0	0	0	0	0	1489
329E1000GC210C00CC0CCE1CCC	22311	0	0	0	0	0	0	0	0	1490
330E1001 3210111101101E1000A	21111	0	0	0	0	0	0	0	0	1294
331E1001A3210111C11C1E1CC0B	23111	0	0	0	0	0	0	0	0	1295
332E1001B3210111101101E10CCCJ1E00B11111		0	0	0	0	0	0	0	0	3296
333E1001C3210111101101E1C01BJ1E00B21111		0	0	0	0	0	0	0	0	1297
334E10C1D3211111101101E1C01	53111	0	0	0	0	0	0	0	0	1298
335E11C0 2211111C1101E0CC	53111	0	0	0	0	9	81125	0		1299
336E1100A2210111101101C1EC000A	53112	0	0	0	0	0	0	0	0	3300
337E1100B2211111C11C1EC000A	53111	0	0	0	0	0	0	0	0	3301
338E1100C2210111101101C1E1100A	53111	0	0	0	0	0	0	0	0	3302
339E1100D2211111101101E1100A	53111	0	0	0	0	0	0	0	0	3303
340E1100E2210111C11C1E110CA	53111	0	0	0	0	0	0	0	0	1304
341E1100F2210111101101E1100A	53111	0	0	0	0	0	0	0	0	1305
342E1100G2210111101101E1100E	53111	0	0	0	0	0	0	0	0	3306
343E1100H2210111101101E11C0A	53111	0	0	0	0	0	0	0	0	1307
344E1100I2210111101101E1100	53111	0	0	0	0	0	0	0	0	1308
345E1100J221C111101101E110CA	53111	0	0	0	0	0	0	0	0	1309
346E1100K2211111101101E1100 M2102A	53111	0	0	0	0	0	0	0	0	1310
347E1100L221111101101C1E1100	53111	0	0	0	0	0	0	0	0	3311
348E1100M2211111C11C1E1100A	53311	0	0	0	0	0	0	0	0	3312
349E1100N2211111101101E1100A	53111	0	0	0	0	0	0	0	0	1313
350E1100D2211111101101E110CA	53111	0	0	0	0	0	0	0	0	3314
351E1100P021C0CCC0C0CCE1100	53211	0	0	0	0	0	0	0	0	3491
352E1101 5211111101101E1100	53111	1156	0	75290	0	0	0	0	1	1315
353E1101A5211111101101E1100 M2102A	53111	0	0	0	0	0	0	0	0	1316
354E1102 3211111101101E11C0	23111	1155	0	66548	0	0	0	0	2	1317
355E11C2A3211111101101E11C0	23111	0	0	0	0	0	0	0	0	4318
356E1102B3210CC0C0C00CE11C2	53111	0	0	0	0	0	0	0	0	4520
357E1200 2211111101101E0C	23111	1158	132861	2579751	50	0	0	0	0	1319
358E1200A2211111C11C1E1200	23111	0	0	0	0	0	0	0	0	3320
359E1200E2211111101101E1200	23111	0	0	0	0	0	0	0	0	3321
360E1300 2211111101101E0000A	23111	1151	666570	4578891455		1	11000205			1322

361E1300A221111111011C1E0CCCA	23112	0	0	0	0	0	0	0	0	1323
362E1301 321111111011C1E1300A	23111	0	0	0	0	0	0	0	0	1324
363E1301A32111111101101E13C1	52112	0	0	0	0	10	52000	0	0	1324
364E1301B02100C000000CCE1301 I17CCD25111		0	0	0	0	14	72000	0	0	1325
365E1301C02100CC00000CCE13C1	22111	0	0	0	0	0	0	0	0	3492
366E1301D02100C000000CCE1301 M2102A21111		0	0	0	0	0	0	0	0	3493
367E1301E321C0C00CC00CE1301	53111	0	0	0	0	0	0	0	0	1494
368E1302 321111110111011E130CA	23111	0	0	0	0	0	0	0	0	3510
369E1302A32111111011C1E1302	52111	0	0	0	0	0	0	0	0	1534
370E1302B32100C0C000CCE13C2	52111	0	0	0	0	0	0	0	0	1326
371E1303 321111111C11C1E1300A	23111	0	0	0	0	0	0	0	0	3521
372E1303A32111111101101E1302	23111	0	0	0	0	12	52400	0	0	1327
373E1303B32111111C1101E1303A	23111	0	0	0	0	0	0	0	0	4328
374E1303C321111111C1101E1303	23111	0	0	0	0	0	0	0	0	1329
375E13C3D32111111011C1E1303A	23111	0	0	0	0	0	0	0	0	1330
376E1304 321CC111C1101E1300	22311	0	0	0	0	0	0	0	0	1331
377E1304A32100111011C1E1304 E1304C22311		0	0	0	0	5	7 714	0	0	1332
378E1304B3210C111C1101E1304	22311	0	0	0	0	0	0	0	0	1333
379E1304C32100111011C1E13C4 E1CCCD22311		0	0	0	0	0	0	0	0	4334
380E1304D321C011101101E1304	22711	0	0	0	0	0	0	0	0	1335
381E1304E32110111011C1E13C4	22111	0	0	0	0	0	0	0	0	1336
382E1304F32100111011101E1304	22411	0	0	0	0	0	0	0	0	1337
383E1304G321CC111011C1E13C4	22111	0	0	0	0	0	0	0	0	1338
384E1304H02100C00000CCE13C4 M2102A22311		0	0	0	0	0	0	0	0	1339
385E13041021CCC000C000CE1304	22311	0	0	0	0	0	0	0	0	4495
386E1304J021CCCCCCCCCE13C4 M21C5A23411		0	0	0	0	0	0	0	0	1496
387E1305 32100111011C1E1300	22111	0	0	0	0	0	0	0	0	1497
388E1305A321CC111C11C1E1305	22111	0	0	0	0	7	41750	0	0	1340
389E1305B321C011101101E1305	22111	0	0	0	0	0	0	0	0	1341
32CE1305C32100111011C1E1305	22111	0	0	0	0	0	0	0	0	1342
391E1306 32100111011C1E1300	21113	0	0	0	0	0	0	0	0	2343
392E1306A32100111011C1E1300A	21113	0	0	0	0	4	31333	0	0	1344
393F1400 11000111011C1ACC	61116	0	0	0	0	0	0	0	0	1345
394F1400A11C1011101C1F1400	61116	1169	0	0	0	0	0	0	0	0346
395F14C0B11010111C11C1F14CC CC401B51126		0	0	0	0	0	0	0	0	1347
396F1400C11910111011011F1400 C04C1B21126		0	0	0	0	0	0	0	0	1348
397F1400D11900111011C1F14CC CC4C1B21126		0	0	0	0	0	0	0	0	1349
398G15CC 13900111C1101A0C	61116	0	0	0	0	0	0	0	0	1350
399G1500A1390C111C11C1G15C0	67116	0	0	0	0	0	0	0	0	1351
400G1500B1390C111011C1G15C0A	67116	0	0	0	0	0	0	0	0	1352
401G1500C231CC00C0C00CG15C0A	31116	0	0	0	0	0	0	0	0	7353
402G1501 23900111C1101G15CCA	67116	3014	0	65353	0	0	0	0	0	3522
403G1502 33900111C1101615C0A	67116	3015	122405	811631031052	0	0	0	0	0	1354
404G1502A33CC0111C11C1G15C2	67116	0	0	0	0	0	0	0	0	1355
405G1503 33900111C11C1G15C0A	67116	3016	828101	7817821059	0	0	0	0	0	1356
406G1503A33900111C1101G15C2	67116	0	0	0	0	0	0	0	0	1357
407G1504 33CC01110110101G15C0A	67116	3017	511643	4963701030	0	0	0	0	0	1358
408G1504A33CC011101101G15C4	67116	0	0	0	0	0	0	0	0	1359
409H1600 13901111011C1ACC	53116	0	0	0	0	0	0	0	0	1360
410H1600A139CC11101101H16C0	53116	0	0	0	0	0	0	0	0	1361
411H1600B13911111011C1H160C C0401B42116		0	0	0	0	0	0	0	0	4362
412H160CC13910111041101H1600 C0401B42116		0	0	0	0	0	0	0	0	1363
413H1600D13900111C1101H1600 C0401B42116		0	0	0	0	0	0	0	0	1364
414H1600E13900111011101H1600 E13C5A52116		0	0	0	0	0	0	0	0	1365
415H16CCF139C0111011C1H1600	52116	0	0	0	0	0	0	0	0	1366
416H160CG13000111011101H16CCED0604J52316		0	0	0	0	0	0	0	0	2367
417H160CH13C0011101C1H160CE	42316	0	0	0	0	0	0	0	0	1368
418H1601 33000111C0101H160CA	55116	1814	95945	925841036	0	0	0	0	0	1369
419H1601A330C0111C1101H1601	55116	0	0	0	0	0	0	0	0	1370
420H1602 33C00111C11C1H160C0 DC6C0812116		1836	0	9679	0	0	0	0	0	1371

421H1602A330C0111C11C1H16C2	DCEC0B12116	0	0	0	0	0	0	0	0	2373
422H1603 230CC111C1101H1600	42116	184514914661560509		955	0	0	0	0		1374
423H1603A23000111C11C1H16C2	C0406A42116	0	0	0	0	0	0	0	0	1375
424H1603B23C00111C1101H1603	42116	0	0	0	0	0	0	0	0	1376
425H16C3C23CD0111C11C1H16C2	42316	0	0	0	0	0	0	0	0	1377
42611700 230001110111C1H00	51116	0	0	0	0	0	0	0	0	1378
42711700A23000111C1101117C0	22116	0	0	0	0	0	0	0	0	1379
428117C0B2300C111C11C1117C0	21126	0	0	0	0	0	0	0	0	1380
42911700C230CC111C11C1117CC	C0405E52116	0	0	0	0	0	0	0	0	1381
43011700D2300C111C11C111700	E1301B25116	0	0	0	0	0	0	0	0	3382
43111700E230C0111C11C111700	12116	0	0	0	0	0	0	0	0	1383
43211700F23CC0111C1101117C0EC	0401B12116	0	0	0	0	0	0	0	0	1384
43311701 33000111C11C111700D	25116	2103	0	122929	0	0	0	0	0	4385
43411701A330C0111C110111701	E1301A25116	0	0	0	0	0	0	0	0	1386
43511701B330C0111C11C1117C1	42116	0	0	0	0	0	0	0	0	3387
43711702 33CC0111C1101117700	22116	2107	38743	215781795		0	0	0	0	1388
43811702A33C0011101101117702	22116	0	0	0	0	0	0	0	0	1389
43911703 330CC111C11C111700	65116	2106	70050	71418 980		0	0	0	0	1390
44011703A33000111011011117C2	65116	0	0	0	0	0	0	0	0	1391
44111704 330C0111C11C111700	65116	2116	495182	4699851053		0	0	0	0	1392
44211704A3300C111C11C1117C4	65116	0	0	0	0	0	0	0	0	1393
44311705 33CC0111C1101117C0E	65126	2118	335305	3240731034		0	0	0	0	1394
44411705A33000111C110111705	65116	0	0	0	0	0	0	0	0	1395
445J1800 13000111011011AGC	61116	0	0	0	0	0	0	0	0	1396
446J18C0A13C0C111C1101J1E00	61116	0	0	0	0	0	0	0	0	1397
447J1800B130C0111011C1J1EC0	13316	0	0	0	0	0	0	0	0	1398
448J180CC30C0111011C1J1E00	11116	0	0	0	0	0	0	0	0	1399
449J1800C03000111C11C1J1EC0	11426	0	0	0	0	0	0	0	0	1400
450J180CE03CC0111C1101J1E00	D0602113316	0	0	0	0	0	0	0	0	4401
451J1800FC3C0C111C1101J1E00	12116	0	0	0	0	0	0	0	0	2402
452J18C0GC30C0111011C1J1E00	12316	0	0	0	0	0	0	0	0	3403
453J180CHC30C0111011C1J1E00	11316	0	0	0	0	0	0	0	0	4404
454J18C0IC30C0111011C1J1EC0	11116	0	0	0	0	0	0	0	0	1405
455J18C0J03C0C111011C1J1E00	11116	0	0	0	0	0	0	0	0	1406
456J180CKC30C0111011C1J1EC0	13316	0	0	0	0	0	0	0	0	1407
457J180CLC3CC0111011C1J1E00	56116	0	0	0	0	0	0	0	0	1408
458J180CMC3CCC111011C1J1800	35126	2539	879885	963030	913	0	0	0	0	1409
459J18C0N03C0011101101J1E00	65116	0	0	0	0	0	0	0	0	1410
460K1900 13CCC111C11C1ACC	57116	0	0	0	0	0	0	0	0	1411
461K1901 33C00111C1101K1900	57116	2803		02018010		0	0	0	0	1412
462K1901A33CC0111C11C1K1900	57116	0	0	0	0	0	0	0	0	1413
463K1902 33000111011C1K1SC0	57116	2804	0	396093		0	0	0	0	1414
464K1902A3300011101 1C1K1902	67116	2852	247003	0		0	0	0	0	1415
465K1903 33C0C111011C1K1900	67116	2806	0	82105		0	0	0	0	1416
466K1903A33CC0111C1101K19C3	67116	2808	88021	0		0	0	0	0	1417
467L2003 13CC0111011C1ACC	11116	2925	0	0	0	0	0	0	0	1418
468L2000A13C0C111C11C1L2CC0	11116	0	0	0	0	0	0	0	0	1419
469L2000B13CCC111C11C1L2CC0A	11116	0	0	0	0	0	0	0	0	1420
470L2000C130C0111011C1L2CC0A	11116	0	0	0	0	0	0	0	0	1421
471L2000D13CC0111011C1L2C00	12116	0	0	0	0	0	0	0	0	2422
472L20C0E13CC0111011C1L2CCC	62116	0	0	0	0	0	0	0	0	1423
473L2000F13CC0111011C1L2C00	52116	0	0	0	0	0	0	0	0	1424
474L2000G1300C111011C1L20C0	12116	0	0	0	0	0	0	0	0	1425
475L20CCH13CC0111011011L2C00	62116	0	0	0	0	0	0	0	0	2426
476L2000I1300C111011C1L2CC0	52116	0	0	0	0	0	0	0	0	1427
477L2CC0J13CCC111011C1L2C00	22116	0	0	0	0	0	0	0	0	1428
478L2000K1300C111C11C1L2CC0	C04C4AE2116	0	0	0	0	0	0	0	0	1429
479L2C00L130CC111011C1L2GC0	22116	0	0	0	0	0	0	0	0	2430
480L2C00M13CC0111011C1L2000	12116	0	0	0	0	0	0	0	0	1431
										1432

481L2000N13000111011C1L2C00	22116	0	0	0	0	0	0	0	0	1433
482L2000D13CC0111011101L2C00	62116	0	0	0	0	0	0	0	0	1434
483L2000P131CC111011C1L2CCC	62116	0	0	0	0	0	0	0	0	1435
484L2CC0003103CCCCCCCCCL2C00	C04C6B41115	0	0	0	0	0	0	0	0	1498
485L2CCCRC31CCCCCCCCCCL2CCC	CC4C6A11115	0	0	0	0	0	0	0	0	1499
486L2000S031C000CCCCCCL2CCC	C04C6A41115	0	0	0	0	0	0	0	0	3500
487L2CC0TC31CCCCCCCCCCL2C0C	61115	0	0	0	0	0	0	0	0	1501
488L2000U031CCCCCCCCCL2CCC	11115	0	0	0	0	0	0	0	0	1502
489L2001 230C0111C1101L2C00	52116	2924	0	0	0	0	0	0	0	1436
490L2001A230C0111C11C1L2C00	52116	0	0	0	0	0	0	0	0	1437
491L2001B230C0111C11C1L2CCC	52116	0	0	0	0	0	0	0	0	1438
492L2001C230C0111C11C1L2CCC	12116	0	0	0	0	0	0	0	0	1439
493L2001D230CC111C1101L2CCC	62116	0	0	0	0	0	0	0	0	1440
494L2002 230C0111011C1L2C00	11116	29301031019	8109741271	0	0	0	0	0	0	1441
495L2002A230C0111C1101L2C0C	11116	0	0	0	0	0	0	0	0	1442
496L2002B23000111C11C1L2CCC	11116	0	0	0	0	0	0	0	0	1443
497L2002C23000111C11C1L2CC0	12116	0	0	0	0	0	0	0	0	1444
498L2002D2300C111011C1L2CCC	21116	0	0	0	0	0	0	0	0	1445
499L2002E031CCCCCCC00CL2C00	11115	0	0	0	0	0	0	0	0	1503
500L2002FC31CCCCC0C0CCL2C0C	11115	0	0	0	0	0	0	0	0	1504
501L2002G2310C10C010C1L2C02	12111	0	0	0	0	0	0	0	0	1506
502L2003 23000111C11C1L2CC0	21116	2940 706056	4317861635	0	0	0	0	0	0	0446
503L2003A230CC1F1C1101L2C00	62116	0	0	0	0	0	0	0	0	1447
504L2003B230CC111C11C1L2C00	61116	0	0	0	0	0	0	0	0	1448
505L2003C23CC01110110C1L2C00	12116	0	0	0	0	0	0	0	0	1449
506L2003D230C0111C11C1L2CCC	21116	0	0	0	0	0	0	0	0	4450
507L2003E230C0111C11C1L2C00	21116	0	0	0	0	0	0	0	0	1451
508L2003F23C00111C11C1L2C00	61116	0	0	0	0	0	0	0	0	1452
509L2003G231C01CCC00CCL2C03	52215	0	0	0	C	0	0	0	0	1507
510M2100 130C01110110 1AC0	51116	0	0	0	0	0	0	0	0	1453
511M2101 230CC111C121CM2100	25116	1620 34147	0	0	0	0	0	0	0	1454
512M2101A230CC111C11C1M2101	25116	0 0	0	0	0	0	0	0	0	2455
513M2102 231C01110110 1M2100	53116	1621 165660	816772028	0	0	0	0	0	0	1456
514M2102A230CC111C11C1M2102	53116	0 0	0	0	0	0	0	0	0	3457
515M2103 230C01110110 1M2100	53116	1622 179875	253707090	0	0	0	0	0	0	1458
516M2103A230CC111C11C1M2103 E1CCCA	53116	0 0	0	0	0	0	0	0	0	1459
517M2104 230CC111C1101M2100	55116	1623 116795	218366 534	0	0	0	0	0	0	1460
518M2104A230C01110110 1M2104	51116	0 0	0	0	0	0	0	0	0	2461
519M2104B330C00CCC000CL2104	51115	0 0	0	0	0	0	0	0	0	1508
520M2105 23C0C1110100 1M2100	51116	1624 0	934250	0	0	0	0	0	0	1462
521M2105A23CC0111C10C1M21CE	51116	1627 158503	0	0	0	0	0	0	0	2463
522M2106 230C01110100 1M2100	33116	0 0	0	0	0	0	0	0	0	1464
523M2106A230C01110100 1M2106	23116	0 0	0	0	0	0	0	0	0	1465
524M2106B330C010CC10CCL21CE	CC4C7C21115	0 0	0	0	0	0	0	0	0	3509
525M2107 530CC1110100 1M2100	51116	163039351503696209	-97	0	0	0	0	0	0	1466
526M2107A530C01110100 1M21C7	51116	0 0	0	0	0	0	0	0	0	1467
527N2200A230C0111C1001N2200	12126	1232 727113	7101681023	0	0	0	0	0	0	1469
528N2200B330C01110100 1N2200	12126	123311287521105 1001021		0	0	0	0	0	0	1470

APPENDIX D

THE ACTS AND AGRICULTURAL POLICY

Public policies, whether economic, social legal or otherwise have their foundations in the statutory and legislative instruments or Acts and processes. The Acts supposedly express the public goals, desires and ends.

The need to provide legal backing to agricultural policy stems from the necessity to make public policy coercive. Individuals in agriculture and in society in general live and function as a group. The group interest, however, can only be fostered fully if the individual can be forced in some way to comply with the rules of safe conduct oriented towards the societal aim.[1]

When we focus on the law or the act in a study of agricultural policy, it is hoped that we shall obtain a good knowledge of the structure and consistencies in the existing stock of farm policies. The law or an act carries the notion of rationality--rationality with respect to the choice of framework for group behaviour and in relation to the selection of means to further some end or course. This rationality also implies a clear articulation of the societal

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[1] Arnold Brecht comments that for an individual who tries to violate the dictates of the law and the constitution of his society, the obstacles that are placed in his path may be insurmountable. Arnold Brecht, Political Theory: The Foundations of Twentieth Century Political Thought (Princeton: New Jersey: Princeton University Press, 1956), p. 88.

goal.[1]

Heady [124, pp. 14-15] has divided agricultural policies into two main categories:

(a) Developmental and

(b) Compensation.

The first is concerned with increased output and is the major tool for the early phases of agricultural development of a country at the non industrial level. The second focuses on the deteriorating income at the farm level caused by excess production and excess capacity at the industrial state and as a result of promoting developmental policy. "In compensation policy, the main effect is to restrain supply, increase demand or make direct transfer payments [124, p. 15)." However, in considering the agricultural policy of industrial North America and the industrial states in Europe, one observes a complex mixture and a seemingly conflicting set of policies. The problem of excess production exists and developmental policy is promoted with as much emphasis as compensation policy.[2] In Canada, the problem of a recent

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[1]Abraham Kaplan in "Some Limitations on Rationality" in Rational Decision, edited by Carl J. Friedrich (New York: Atherton Press, 1967), p. 57 contends that it is not clear as to what values rational decisions in law and politics are presumed to aim at. Rationality to him, therefore, "is more than a matter of acting so as to secure the values pursued." Hence, rationality cannot be judged only by the choice of means, and "A theory which demands only consistency of preference scales (a stable transitivity of utilities) is grossly inadequate to the political process."

For further readings on the structure and purpose of law, Rational Decision provides helpful introduction.

[2]Heady observes that agricultural policy in America contains both elements of developmental and compensation. Earl O. Heady, Agricultural Policy Under Economic Development (Ames, Iowa: Iowa State University Press, 1962), p. 16.

surplus disposal of egg and poultry reflects this. In the countries of the European Economic Community the supply of dairy and meat products is always in excess of the market demand. These are but a few examples. At the outset these conflicts are baffling. Nevertheless examination of the underlying agricultural acts and various legal instruments and institutions and their history will furnish the framework for understanding the inconsistencies, redundancy and obsoleteness in these agricultural policies of the countries concerned. In tracing the origin of some of the current agricultural policy in America, it is found that the early goals and values of the premachine era, the latter adoption of the philosophy of farm fundamentalism, and the emergence of farm organizations and their protests have provided the mould for the existing agricultural acts.[1]

In a more recent work by Crown and Heady the structure and performance of Canadian agricultural policy have been analysed within the framework of the Acts and their history.[2] Ciriacy-Wantrup's classic writing on resource conservation also shows how policy issues should

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[1] Tweeten lists these as:

(i) the work ethic,
(ii) the democratic creed,
(iii) the enterprise creed,
(iv) creed of self-integrity,

Luther Tweeten, Foundations of Farm Policy (Lincoln: University of Nebraska Press, 1971), Chapter 1, pp. 1-27.

[2] Robert W. Crown and Earl O. Heady acknowledge the importance of Drummond, Anderson, and Kerr's Review of Agricultural Policy in Canada in their study and also for anyone who has interest in understanding the nature of existing Canadian agricultural policy. Robert W. Crown and Earl O. Heady, Policy Integration in Canadian Agriculture (Ames, Iowa: Iowa State University Press, 1972).

be studied in relation to the acts behind them.[1]

In "Progress and Prospects of Canadian Agriculture" one also sees the importance of examining agricultural acts and their history in gaining a better view of the current and the past states of Canadian agriculture, an anticipated future trend and the prospects for present and future actions.[2] The economic analysis of the feed freight assistance policy by Kerr demonstrates in detail the functioning of an agricultural act and the proper understanding of the problems which it is intended to solve.[3]

Commenting on "The Law and Economic Policy", Watson observes that, "The body of laws through which economic policies operate has grown by accretion. It is not fixed, but instead changes every year in numerous small ways."[4]

He identifies seven levels of law in order of importance and precedence in a federal setting of government as in the United States of America:

1. The Constitution and all its amendments in the progress of

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[1]S. V. Ciriacy-Wantrup, Resource Conservation Economics and Policies, 3rd ed. (California: University of California, Division of Agricultural Sciences, 1968).

[2]See W. M. Drummond and W. Mackenzie, Progress and Prospects of Canadian Agriculture (Ottawa: Royal Commission on Canada's Economic Prospects, 1957).

[3]T. C. Kerr, An Economic Analysis of the Feed Freight Assistance Policy (Ottawa: Agricultural Economics Research Council of Canada, 1966).

[4]Watson, Donald Stevenson. Economic Policy: Business and Government (Boston: Houghton Mifflin Company, 1960).

time and their interpretations in the Supreme Court form the supreme law of the land.

2. Within the context of the Constitution, the Congress (Parliament) enacts laws which form the statutes.

3. From the statutes and the Constitution are derived the state (provincial) constitutions.

4. The statutes of the state (provincial) legislatures in turn are derived from the state (provincial) constitutions.

5. In the fifth class are the "detailed regulations issued by the (executive) departments and agencies of the federal, state (provincial) governments which have the force of law.

6. The ordinances of local governments, which are derived from provincial statutes and regulations.

7. Common law and the law of equity.

He notes that the last category is the product of court decisions and stands apart from the other six levels of statutory and regulatory law.

With respect to the relation between the common law and economic policies, he submits that the body of traditional and unwritten laws from the courts is necessary to regulate the countless details of economic activities. And although the aims of these regulating instruments in checking behaviours contrary to the objectives of economic policy may never be fully attained, the enforcement of these laws ensures some safe minimum levels of these evils and thus "facilitates the smooth flow of productive economic activity." Economic policies, however, are expressed in the statutory laws.

Another distinguishing feature between the common law and

economic policy which he brings out is in the difference in the methods of operation. Common law is not preventive. The process of action is slow and the burden of enforcement is placed on those wronged. Economic policy, on the other hand has preventive feature and shifts "the task of enforcement from the wronged individual to a government agency." This quality "speeds the legal process and makes protection active rather than passive."

Law on the Farm by Harold W. Hannah gives a detailed account of the operation of these acts in regulating farmers actions at the micro-level of the farm.[1]

The inclusion of the following lists of agricultural acts significant in Alberta agriculture will aid understanding of the structure and the contents of agricultural policy in Alberta. For the reader who wants to know the decision making process which provide these acts, The Structures of Policy-Making in Canada is an excellent introduction.[2]

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[1]Harold W. Hannah, Law on the Farm (New York: The MacMillan Company, 1950).

[2]G. Bruce Doern and Peter Aucoin eds., The Structures of Policy-Making in Canada (Toronto: The MacMillan Company of Canada Limited, 1971).

APPENDIX E

SOME SELECTED PROVINCIAL ACTS OF SIGNIFICANCE IN ALBERTA AGRICULTURE IN 1972

Volume	Chapter	Name of Act and History	Administered by:
1	4	Agricultural Chemicals Act, 1970,SS. 2, 6, 7, 12, 21, 1972, c. 4 [1969, c. 3, s. 1]	M. Agric.
	5	Agricultural Pests Act, 1960 [1960, c. 1., s. 1]	M. Agric.
	6	Agricultural Relief Advances Act [R.S.A. 1955, c. 7, s. 1]	E. C.
	7	Agricultural Service Board Act, 1967, 1972, 1973 [R.S.A. 1955, c. 9, s. 1]	M. Agric.
	8	Agricultural Societies Act, 1967, 1972, 1973 [R.S.A. 1955, c. 10, s. 1]	M. Agric.
	9	Agricultural and Vocational Colleges Act, 1972 [1967, c. 3, s. 1]	A. Ed.
	10	Agrologists Act, 1971 [R.S.A. 1955, c. 11, s. 1]	M. Agric.
	23	Artificial Insemination of Domestic Animals Act [1959, c. 15, s. 1]	M. Agric.
	24	Assessment Appeal Board Act [1957, c. 2, s. 1]	Mu. Af.
	26	Bee Diseases Act [R.S.A. 1955, c. 20, s. 1]	M. Agric.
	27	Beet Lien Act [R.S.A. 1955, c. 21, s. 1]	M. Agric.
	33	Brand Act, 1972 [R.S.A. 1955, c. 30, s. 1]	M. Agric.
	54	Coarse Grain Marketing Control Act	

	59	Command Property Act, Repealed 1972, c. 103, Eff. March, 1973 [R.S.A. 1955, c. 52, s. 1]	Mu. Af.
	67	Cooperative Associations Act, 1971 [R.S.A. 1955, c. 59, s. 1]	E.C.
	68	Cooperative Marketing Associations Guarantee Act, 1971, 1972 [R.S.A. 1955, c. 59, s. 1]	Prov. Tr.
2	73	Credit and Loan Agreements Act, 1972 [1967, c. 11, s. 1]	E.C.
	74	Credit Union Act, 1971 [R.S.A. 1955, c. 67, s. 1]	Prov. Tr.
	76	Crop Liens Priorities Act [R.S.A. 1955, c. 68, s. 1]	M. Agric.
	77	Crop Payments Act [R.S.A. 1955, c. 69, s. 1]	M. Agric.
	78	Crop Payments (Irrigated Land Sales Act) [R.S.A. 1955, c. 70, s. 1]	M. Agric.
	80	Crown Cultivation Leases Act [R.S.A. 1955, c. 71, s. 1]	L & F
	83	Dairymen's Act [R.S.A. 1955, c. 74, s. 1]	M. Agric.
	94	Department of Agriculture Act, 1972 [1970, c. 27, s. 1]	M. Agric.
	103	Department of Municipal Affairs Act [R.S.A. 1955, c. 210, s. 1]	Mu. Af.
	109	Devolution of Real Property Act [R.S.A. 1955, c. 83, s. 1]	M. Agric.
	112	Domestic Animals [Municipalities] Act, 1970	
	115	Drainage Districts Act, 1971, 1972 [R.S.A. 1955, c. 91, s. 1]	Mu. Af. E. C.

125	Environment Conservation Act, 1971, 1972 [1970, c. 36, s. 1]	Env.
126	Estate Tax Rebate Act [1967, c. 18, s. 1]	A.G.
130	Expropriation Procedure Act, [1961, c. 30, s. 1]	P.U.B.
135	Farm Home Improvements Act, 1972 [1959, c. 18, s. 1]	Prov.
136	Farm Implements Act, 1971, 1973 [1967, c. 20, s. 1]	M. Agric.
137	Farm Purchase Credit Act, 1971, 1972 [1963, c. 17, s. 1]	Mu. Af. E. C.
140	Federal-Provincial Farm Assistance Act, 1972 [1959, c. 17, s. 1]	M. Agric.
141	Feeder Associations Guarantee Act [R.S.A. 1955, c. 112, s. 1]	M. Agric.
146	Forest Reserves Act, 1971 [1964, c. 29, s. 1]	L & F
147	Forests Act, 1970, 1972 [1961, c. 32, s. 1]	L & F
149	Freight Bureau Act, Repealed 1971 [R.S.A. 1955, c. 121, s. 1]	
150	Frozen Food Act [R.S.A. 1955, c. 122, s. 1; 1963, c. 18, s. 2]	M. Agric.
154	Fur Farms Act [1960, c. 34, s. 1]	M. Agric.
160	Grain Buyers Licensing Act [R.S.A. 1955, c. 132, s. 1]	E. C.
161	Grain Charges Limitation Act [R.S.A. 1955, c. 133, s. 1]	
162	Groundwater Control Act [R.S.A. 1955, c. 135, s. 1]	P.U.B.

	164	Hail and Crop Insurance Act, 1973 [1969, c. 42, s. 1]	M. Agric.
	165	Harvesting Liens Act [R.S.A. 1955, c. 138, s. 1]	A.G.
3	169	Highway Traffic Act (Part 3, s. 54) [1969, c. 30, s. 1]	H & T
	172	Homestead Lease Loan Act [R.S.A. 1955, c. 142, s. 1]	L & F
	173	Horned Cattle Purchases Act, 1971 [R.S.A. 1955, c. 143, s. 1]	M. Agric.
	180	Improvement Districts Act, 1971, 1972 [1965, c. 39, s. 1]	
	181	Improvement Districts Stray Animals Act, 1971 [R.S.A. 1955, c. 151, s. 1]	M. Agric.
	182	Alberta Income Tax Act [1961, (2), c. 1, s. 1]	A. G.
	183	Industrial Development Act [R.S.A. 1955, c. 154, s. 1]	E. C.
	187	The Alberta Insurance Act [R.S.A. 1955, c. 159, s. 1]	E.C.
	192	Irrigation Act, 1971, 1972 [1968, c. 49, s. 1]	M. Agric.
	196	The Alberta Labour Act, 1973	E. C.
	198	Land Titles Act, 1971, 1973 [R.S.A. 1955, c. 170, s. 1]	A.G.
	199	Land Titles Act Clarification [1956, c. 26, s. 1]	A.G.
4	207	The Licensing of Trades and Business Act, 1971, 1973 [R.S.A. 1955, c. 175, s. 1]	E.C.
	210	Line Fence Act [R.S.A. 1955, c. 178, s. 1]	M. Agric.
	214	Livery Stables Keepers Act [R.S.A. 1955, c. 180, s. 1]	A.G.

215	Livestock and Livestock Products Act, 1973 [R.S.A. 1955, c. 181, s. 1]	M. Agric.
216	Livestock Diseases Act [1969, c. 63]	M. Agric.
217	Livestock Injury Act [R.S.A. 1955, c. 183, s. 1]	M. Agric.
224	Margarine Act, 1972 [R.S.A. 1955, c. 190, s. 1]	M. Agric.
225	Marketing of Agricultural Products Act, 1972 [R.S.A. 1955, c. 192, s. 1]	M. Agric.
233	Metis Betterment Act, 1971 [R.S.A. 1955, c. 202, s. 1]	E.C.
234	Milk Control Act (Dairy Board Act), 1971, 1972 [1966, c. 55, s. 1]	P.U.B.
246	Municipal Government Act. 1971, 1972 [1968, c.68, s.1]	Mu. Af.
251	Municipal Taxation Act, 1971, 1973 [1967, c. 54, s. 1]	Mu. Af.
327	The Sale of Goods Act [R.S.A. 1955, c. 295, s. 1]	A.G.
335	Seed Control Areas Act [R.S.A. 1955, c. 304, s. 1]	M. Agric.
336	Seed Dealers Act [1957, c. 87, s. 1]	M. Agric.
337	Seed Grain Purchase Act [R.S.A. 1955, c. 305, s. 1]	M. Agric.
339	Setting of Poison Act [R.S.A. 1955, c. 309, s. 1]	L & F
348	Soil Conservation Act [1962, c. 84, s. 1]	Mu. Af. M. Agric.
349	Special Areas Act [1964, c. 87, s. 1]	Mu. Af.

356	Surface Reclamation Act [1963, c. 64, s. 1]	M & M Mu. Af.
363	Threshers' Lien Act [R.S.A. 1955, c. 335, s. 1]	Mu. Af. L & F
368	Transfer and Descent of Land Act [R.S.A. 1955, c. 342, s. 1]	M. Agric.
381	Vegetable Sales (Alberta) Act [R.S.A. 1955, c. 355, s. 1]	M. Agric.
383	Veterinary Surgeons Act, 1971 [R.S.A. 1955, c. 359, s. 1]	E.C.
385	Warehouse Receipts Act [R.S.A. 1955, c. 364, s. 1]	A.G.
386	Warehousemen's Liens Act [R.S.A. 1955, c. 365, s. 1]	A.G.
388	Water Resources Act, 1971 [R.S.A. 1955, c. 362, s. 1]	P.U.B.
391	The Wildlife Act, 1971, 1972 [1970, c. 113, s. 1] Agricultural Development Act [1972, c. 5] Bee Act, 1972, c. 27	L & F

Key to Codes:

M. Agric.	= Minister of Agriculture
A. Ed.	= Minister of Advanced Education
Mu. Af.	= Minister of Municipal Affairs
E. C.	= Member of the Executive Council
Prov. Tr.	= Provincial Treasurer
Env.	= Minister of Environment
A. G.	= Attorney General
P. U. B.	= Public Utilities Board
L & F	= Minister of Lands and Forests
H & T	= Minister of Highways and Transport

N.R.T. = Minister of National Revenue for Taxation

M & M = Minister of Mines and Minerals

R.S.A. = Revised Statutes of Alberta

Source : Government of Alberta. Statutes of Alberta, 1972-1974 Edmonton, Alberta: Queen's Printer

_____. Revised Statutes of Alberta, 1970. Edmonton, Alberta: Queen's Printer

APPENDIX F

SOME SELECTED PROVINCIAL ACTS AND REGULATIONS GOVERNING ALBERTA AGRICULTURE IN 1972

Act	Alberta Regulation
1. Agricultural Chemicals Act	
Agricultural Chemicals (Use and Handling)	89/70
Amended	26/72
Amended	359/72
Pesticides (Use and Application)	90/70
Amended	103/71
Amended	25/72
2. Agricultural Development Act	
General	323/72
3. Agricultural Pests Act	
Bacterial Ringrot Control	207/66
Coyote Control	272/61
Coyote Control, Compound 1080 for	380/59
Amended	2/63
Coyote Control, M.D. of Minburn	367/60
Lloydminster (Town of), Act to apply to	400/57
Pests, Declaration to be	394/59
Rat Control	60/57
4. Agricultural Societies Act	
Capital Grants	363/71
Amended	376/71
Guaranteed Borrowing	128/72
5. Agrologists Act	
Bylaws of Institute	376/67
Amended	272/68
6. Alberta General Insurance Company Act	
Bylaws exempted from filing	34/57
7. Alberta Opportunity Fund Act	
General	263/72
8. Animal Protection Act	
General	274/67
9. Apprenticeship Act	
10. Artificial Insemination of Domestic Animals Act	
Artificial Insemination	372/68
Amended	139/70
Amended	325/71

11. Bee Act
    Beekeeper Registration
    256/72

12. Bow River Development Act
    Land Prices
    218/59

13. Clean Air Act
    Air Contaminant (Maximum Levels)
    General
    303/71
    299/71

14. Clean Water Act
    General
    300/71

15. Coarse Grain Marketing Control Act
    General
    Amended
    58/57
    145/61

16. Communal Property Act
    Zoning
    Amended
    95/57
    Amended
    225/57
    9/70

17. Cooperative Associations Act
    Bylaws
    Amended
    132/57
    Amended
    39/59
    Amended
    185/61
    164/72

18. County Act

19. Credit and Loan Agreements Act, 1967
    General
    Amended
    310/67
    Amended
    407/67
    Amended
    178/68
    Amended
    153/69
    Amended
    324/69
    Amended
    374/69
    63/72

20. Credit Union Act
    Bylaws
    Amended
    134/57
    Amended
    332/67
    Amended
    9/69
    Amended
    229/70
    Amended
    384/70
    Amended
    368/71
    Bylaws
    143/72
    Fees
    147/72
    133/57

21. Crop Insurance Act, the Alberta
    - Canning and Freezing Pea Crop General — 290/68
    - Amended — 440/66
    - Amended — 25/69

22. Cultural Development Act
    - Board Members (Allowances and Expenses) — 90/68
    - Amended — 174/70
    - Community Recreation Bureau — 796/57

23. Dairy Board Act
    - Alberta Plan for Milk Market Sharing — 74/72
    - Amended — 356/72
    - Prices (Minimum for Milk) — 371/72
    - Production, Supply, Distribution and Sale — 29/70
    - Amended — 292/70
    - Amended — 67/71
    - Amended — 167/72

24. Dairymen's Act
    - General — 250/64
    - Amended — 334/65
    - Amended — 153/66
    - Amended — 256/66
    - Amended — 32/67
    - Amended — 307/69
    - Amended — 57/70
    - Amended — 304/71
    - Amended — 144/72
    - Inspectors of Dairy Products — 300/70

25. Department of Advanced Education Act
    - Agricultural and Vocational Colleges (Pay rates, Institutional Staff, Evening Class Programs) — 393/72

26. Department of Agriculture Act
    - Alberta Fresh Vegetable Commission Loan Guarantee, 1972 — 56/72
    - Alberta Marketing Boards Loan Guarantee — 169/72
    - Amended — 326/70
    - Alberta Mink Interim Assistance Loan Guarantee, 1971 — 62/71
    - Alberta Mink Interim Assistance Loan Guarantee, 1972 — 52/72
    - Alberta Potato Loan Guarantee — 145/72
    - Amended — 211/72
    - Dairy Development Loan Guarantee — 109/72
    - Amended — 210/72
    - Guarantees for Interim Assistance Loans — 351/69
    - Amended — 34/70
    - Amended — 125/70

Land Development Loan Guarantee
Amended 253/70
Stanley Kjelland 250/72
Livestock Loan Guarantee 349/71
Amended 111/71
Amended 147/71
Amended 232/71
Amended 358/71
Amended 41/72
Amended 117/72
Loans for Drying Wet Grain 271/72
Amended 89/69
Vegetable Co-operative Loan Guarantee, 1972 124/70
Department of Education Act, 1970 200/72

27. Department of Highways and Transport Act
Lease of Road Allowance (Evansburg) 281/71

28. Electrical Protection Act
Farmstead Wiring 15/72

29. Estate Tax Rebate Act
Forms 158/67
General 157/67

30. Estate Tax Rebates Reciprocal Arrangements Act
Additional Estate Tax Rebates 64/71
General 55/71

31. Farm Home Improvement Act
General 265/59

32. Farm Implement Act
General 372/71

33. Farm Purchase Credit Act, 1963
General 511/63
Amended 74/66

34. Forest and Prairie Protection Act
Fire Hazard 310/72
Fire Protection and Wage Rental 334/71
Forest and Prairie Protection 135/72
Forest Protection Areas 156/71

35. Forest Reserves Act
General 604/65
Marmot Creek Watershed Research Basin 233/71

36. Frozen Food Act
Licensing and Operation
Amended 320/63
Amended 527/63
Amended 8/64
Amended 49/69
Amended 334/69
Amended 152/70
Amended 14/71
298/71

37. Fur Farms Act
General
225/60

38. Grain Buyers' Licensing Act
Fees
224/57

39. Groundwater Control Act
General
662/57

40. Hail and Crop Insurance Act
Crop Insurance
166/72

41. Highway Traffic Act

42. Homestead Lease Loan Act
General
Interest on Loans 232/66
246/65

43. Improvement Districts Act

44. Improvement Districts Stray Animals Act
Pound Districts
318/57

45. Alberta Income Tax Act
Tax Deductions
317/72

46. Industrial Development Incentives Act
General
116/71

47. Industry and Tourism Department Act

48. Alberta Insurance Act

49. Irrigation Act, 1968
Forms
Amended 353/68
Form Q (Publication of a Petition) 209/69
Interest Rate 88/71
Irrigation Seepage Claims Exemption 128/70
Amended 15/71
Amended 347/71
66/72

50. Irrigation Land Manager Act
Land Sales 19/70

51. Alberta Labour Act
Irrigation Industry 155/66
Recreation and Athletic Programs 225/67
Sugar Beet Processing Industry 220/69
Dairy Industry (Calgary) 297/63
Dairy Inspectors 77/62
Farm Machinery Salesmen 138/70
Amended 106/71

52. Land Titles Act
Act Amended
Form 26 388/58
Form 33 376/59
Form 39 33/57
Form 39 165/57
Form 40 165/57

53. Margarine Manufacturing 365/68
Amended 411/68

54. Licensing of Trade and Business Act
Flour and Feed Milling 362/68
Amended 409/68
Meat Packing 366/68
Amended 412/68

55. Livestock Brand Inspection Act
Fees 273/57
Amended 100/65
Livestock Brand Inspection 272/72

56. Livestock and Livestock Products Act
Alberta Chicken Flock 251/69
Amended 13/71
Amended 65/72
Chicks (Production and Sale) 256/65
Amended 70/66
Egg Product (Purchase and Sale) 87/70
Honey Grading 229/57
Amended 165/72
Livestock Dealers and Agents
(Licensing and Bonding) 366/66
Amended 286/67
Amended 346/69
Poultry and Poultry Products Dealers
(Licensing and Bonding) 67/60
Amended 181/60
Amended 382/60
Amended 211/61
100/70

Poultry (Dressed and Eviscerated) 66/60
Amended 382/60
Amended 348/71
Ribbon Branding of Beef, Veal, Lamb or Mutton Carcasses 258/62
Shell Eggs (Purchase and Sale) 116/70
Stockyard Licensing 373/58
Alberta Turkey Flock 261/69
Uniform Dressing Standards and Settlement Procedures for Cattle Sold on a Rail Grade Basis 347/69

57. Livestock Diseases Act, 1971
Brucellosis Restricted Areas
Camrose (M.D. No. 63) 81/57
Eagle (M.D. No. 81) 81/57
I.D. No. 58 312/59
Morinville (M.D. No. 91) 81/57
Vaccination of Cattle in 111/57
Amended 278/58
Amended 528/63
Amended 320/66
Communicable Diseases (Designation) 275/72
Communicable Diseases of Avian Species (Control Order) 122/71
Cows (Udder Fibrosis) 310/59
Dead Animals (Destruction and Disposal) 128/66
Livestock Medicine 300/64
Amended 602/65
Amended 27/68
Amended 238/69
Livestock Medicine (Refund of License Fees) 414/63
Sheep Foot Rot 383/72
Slaughterhouse 433/61
Amended 183/65
Amended 603/65
Stockyards (Operation of Class C) 379/58
Stockyards (Operation of Class D) 57/69
Amended 416/62
Amended 483/66
Amended 401/66
Amended 124/68
Stockyards (Operation of Class E) 380/58
Amended 80/59
Amended 414/62
Amended 483/62
Amended 401/66
Stockyards (Operation of Class F) 381/58
Amended 79/59
Amended 415/62
Amended 483/62
Amended 401/66

Stockyards (Operation of Class G) 382/58
Stockyards (Cleaning of Vehicles at) 79/57
Vaccine (Brucella Abortus Strain) 204/57
Vaccine (Poultry Disease) 58/58
Amended 239/69

58. Lloydminster Municipal Amalgamation Act
Agricultural Pests Act to Apply to 400/57

59. Marketing of Agricultural Products Act
Alberta Broiler Growers' Marketing Board (Marketing of Broilers) 354/72
Alberta Broiler Growers' Marketing Plan, 1965 17/66
Amended 158/68
Implementation of 458/67
Amended 44/68
Amended 5/69
Amended 216/71
Alberta Cattle Commission Plan, 1969 170/69
Amended 297/69
Amended 385/70
Implementation of Plan re 297/71
Amended 194/72
Registration and Licensing under 322/71
Alberta Egg and Fowl Marketing Plan, 1967 156/68
Amended 271/70
Amended 386/70
Amended 24/72
Amended 281/72
Implementation of
Amended 193/72
Amended 294/72
Amended 338/72
Marketing under 283/71
Amended 339/71
Amended 1/72
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Source: Government of Alberta. The Alberta Gazette - Index of Regulations filed Under the Regulations Act To the 31st Day of December, 1972. Edmonton, Alberta: Queen's Printer, n.d.

APPENDIX G

SOME SELECTED FEDERAL ACTS SIGNIFICANT IN ALBERTA AGRICULTURE

	Volume	Chapter	Name of Act & History	Administered By:
1	1	A-4	Agricultural and Rural Development (ARDA), 1966-67, c. 11, s. 2	Q. P. C.
2		A-5	Agricultural Products Board Act [R.S. c. 4, s. 1]	M. Agric.
3		A-6	Agricultural Products Co-operative Marketing [R.S. c. 5, s. 1]	M. Agric.
4		A-7	Agricultural Products Marketing [R.S. c. 6, s. 1]	Provincial Board as authorised by Governor in Council
5		A-8	Agricultural Products Standards Act, Canada, 1955, c. 27, s. 1	M. Agric.
6		A-9	Agricultural Stabilization Act [1957-58, c. 22, s. 1]	M. Agric.
7		A-10	Agriculture, Department of [R.S. c. 66, s. 1]	M. Agric.
8		A-13	Animal Contagious Disease Act [R.S. c. 9, s. 1]	M. Agric.
9		A-15	Anti-Dumping Act, 1968-69 c. 10, s. 1	N.R.
10		C-4	Canada Manpower and Immigration Council Act, 1967-68, c. 13, s. 1	M & I
11		C-7	Canadian Dairy Commission Act [1966, c. 34, s. 1]	M. Agric.
12		C-12	Canadian Wheat Board Act [R.S. c. 44, s. 1]	Q.P.C.

13		C-22	Cold Storage Act [R.S. c. 52, s. 1]	M. Agric.
14	2	C-29	Cooperative Credit Associations Act [1952-53 c. 28, s. 1]	M.F.
15	2	C-26	Crop Insurance [1959, c. 42, 2. 1]	M. Agric.
16	3	D-1	Dairy Products, Canada [R.S. c. 22, s. 1]	M. Agric.
17		E-6	Energy, Mines and Resources, Department of	E.M.R.
18		E-9	Estate Tax Act, 1958 c. 29, s. 1	N.R.
19		E-14	Experimental Farm Stations [R.S. c. 101, s. 1]	M. Agric.
20		E-17	Export and Import Permits [1953-54, c. 27, s. 1]	I.T.C.
21		E-18	Export Development Act [1968-69, c. 39, s. 1]	Q.P.C.
22		E-19	Expropriation Act [R.S. c. 106, s. 1]	P.B.
23		F-3	Farm Improvement Loans [R.S. c. 110, s. 1]	M.F.
24		F-4	Farm Syndicates Credit Act [1968-69, c. 32, s. 1]	M. Agric.
25		F-4	Farmers' Creditors Arrangement [R.S. c. 111, s. 1]	A.C.
26		F-7	Feeds Act, 1960 c. 14, s. 1	M. Agric.
27		F-9	Fertilizers Act, 1957 c. 27, s. 1	M. Agric.
28		F-27	Food and Drugs Act, 1952-53, c. 38, s. 1	N.H. & W.
29		F-31	Fruit, Vegetables and Honey Act [R.S. c. 126, s. 1]	M. Agric.

30	4	G-16	Grain, Canada [R.S. c. 25, s. 1]	M. Agric.
31		G-17	Grain Futures Act [R.S. c. 140, s. 1]	M. Agric.
32		H-2	Hay and Straw Inspection Act [R.S. c. 141, s. 1]	M. Agric.
33		H-3	Hazardous Products [1968-69, c. 42, s. 1]	N.H. & W. C.& C.F.
34		H-10	Humane Slaughter of Food Animals Act, 1959, c. 44, s. 1	M. Agric.
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36		I-10	Industrial Research and Development Incentives Act [1966-67, c. 82, s. 1]	I.T.C.
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38		I-12	Inland Water Freight Rates Act [R.S. c. 153, s. 1]	M. Agric.
39		I-14	Inspection and Sale Act [R.S. c. 155, s. 1]	M. Agric.
40		I-17	Insurance, Department of [R.S. c. 70, s. 1]	M.F.
41		I-18	Interest Act [R.S. c. 156, s. 1]	
42	5	L-2	Labour, Department of [R.S. c. 72, s. 1]	
44		L-4	Land Titles Act [R.S. c. 162, s. 1]	A.G.
45		L-8	Livestock and Livestock Products [R.S. c. 167, s. 1]	M. Agric.
46		L-9	Livestock Feed Assistance Act [1966-67, c. 52, s. 1]	Q.P.C.

47		L-10	Livestock Pedigree Act [R.S. c. 168, s. 1]	M. Agric.
48		L-11	Livestock Shipping Act [R.S. c. 169, s. 1]	M.T.
49		L-12	Loan Companies Act [R.S. c. 170, s. 1]	M.F.
50		M-1	Manpower and Immigration Department of	M.F.
51		M-6	Meat and Canned Foods Act R.S. c. 177, s. 1	M. Agric.
52		M-7	Meat Inspection Act, 1955, c. 36, s. 1	M. Agric.
53		M-13	Milk Test Act R.S. c. 180, s. 1	
54		N-9	National Health and Welfare, Department of R.S. c. 74, s. 1	N.H. & W.
55		N-15	National Revenue, Department of R.S. c. 75, s. 1	N.R.T.
56		N-16	National Trade and Mark and True Labelling Act R.S. c. 191, s. 1	C. & C.A.
57		N-17	National Transportation Act [1966-67, c. 69, s. 2]	M.T.
58	6	P-10	Pest Control Products Act. [1968-69, c. 50, s. 1]	M. Agric.
59		P-11	Pesticide Residue Compensation Act [1968-69, c. 34, s. 1]	M. Agric.
60		P-13	Plant Quarantine Act [1968-69, c. 35, s. 1]	M. Agric.
61		P-16	Prairie Farm Assistance Act [R.S. c. 213, s. 1]	M. Agric.
62		P-17	Prairie Farm Rehabilitation Act [R.S. c. 214, s. 1]	R.E.E.

63		P-18	Prairie Grain Advance Payments Act [1957-58, c. 2, s. 1]	C.N.B.
64		R-3	Regional Development Incentives Act [1968-69, c. 56, s. 1]	R.E.E.
65		R-4	Regional Economic Expansion, Department of	R.E.E.
66	7	S-10	Small Business Loans Act, 1960-61, c. 5, s. 1	M.F.
67		S-11	Small Loans Act, R.S. c. 251, s. 1	M.F.
68		W-9	Wheat Cooperative Marketing Act [R.S. c. 294, s. 1]	M. Agric.

Supplements

1st Supplement Amendments and Additions

69	1	Agricultural Products Cooperative Marketing Act Amendment [1969-60, c. 23]	M. Agric.
70	5	Canada Water Act [1969-70, c. 52]	E.M.R.
71	16	Expropriation Act [1969-70, c. 41]	P.W.
72	18	Industrial Research and Development Incentives Act Amendment [1969-70, c. 42]	I.T.C.
73	24	Loan Companies Act Amendment [1969-70, c. 17]	C. & C.A.
74	33	Quarantine Act [1969-70, c. 18]	N.H. & W.
75	40	Small Business Loans Act Amendment [1969-70, c. 21]	M.F.
76	41	Standards Council of Canada Act	Q.P.C.

Source: Revised Statutes of Canada, 1970. Ottawa: Queen's Printer 1970.

Key to Codes under "Administered by:"

M.F.	= Minister of Finance
Q.P.C.	= Member of the Queen's Privy Council for Canada as is designated by the Governor in Council, 1966-67, c. 11, s. 3
N.R.	= Minister of National Revenue
N.R.T.	= Minister of National Revenue for Taxation
M & I	= Minister of Manpower and Immigration, 1967-68, c. 13, s. 2
E.M.R.	= Minister of Energy, Mines and Resources
I.T.C.	= Minister of Industry, Trade and Commerce
P.W.	= Minister of Public Works
A.C.	= Appeal Court
N.H. & W.	= Minister of National Health and Welfare
C. & C.A.	= Minister of Consumer and Corporate Affairs
R.E.E.	= Minister of Regional Economic Expansion
C.W.B.	= Canadian Wheat Board
M.T.	= Minister of Transport
M. Agric.	= Minister of Agriculture
R.S.	= Revised Statutes of Canada